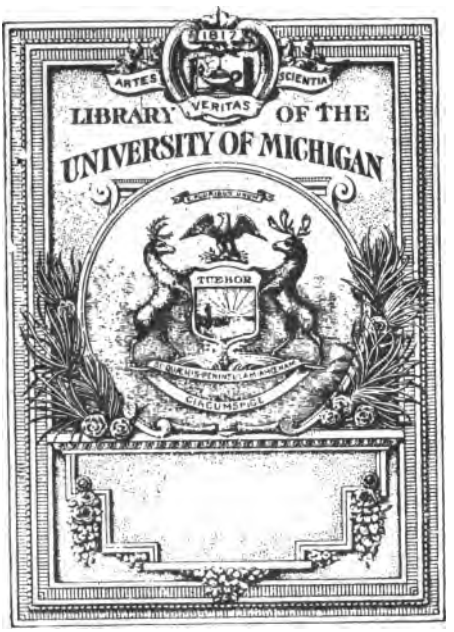

Joseph Knitzer

MODERN VIOLIN-PLAYING

BY

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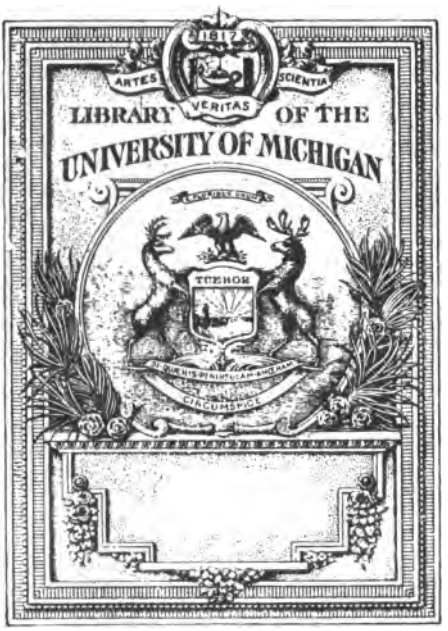


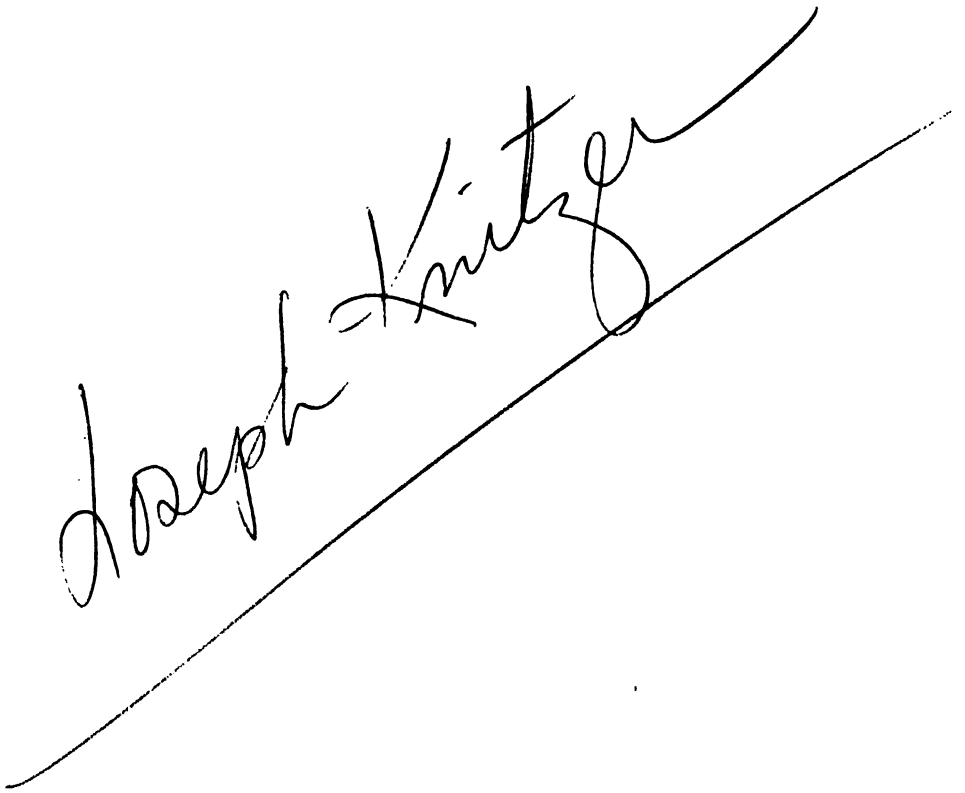


Plate I

The "Correct Position" (*See page 17*)

MODERN VIOLIN-PLAYING

CHAPTER I

THE THREE LINKS

THE object of this book is to help violin-players. To help them, that is to say, by offering them something that is quite new in the violin-world—an accurate study of the physical laws that govern violin-playing, and clear instructions for acquiring a sound violin-technique.

The process of learning to play the violin has no *direct* connection with the art of music. It depends for its success solely on the proper understanding and application of the laws of anatomical action. And these, again, are merely specialized examples of the more general laws of mechanics.

Till the violinist has mastered these laws and has learned to regard his violin *as a machine*, he should keep all his ideas on the expressive side of music under lock and key. Emotion, when pitted against the eternal laws of the universe, has a poor chance of success; and even when working in harmony with them, it only rarely manages to express itself. This is a hard row to hoe; but assuredly the only one worth the hoeing. And if some bitterness and impatience tend to rise in the student's mind, he should ask himself how he would like to take a railway-journey over the bridges of an emotional engineer, whose sympathetic soul was ignorant of the stresses and strains of *his* instrument —steel.

"But," the student may ask "surely *all* violinists do not need to go through this stern mechanical training? Surely *some* are born with the divine gift of violin-playing? And if *some*, why not *I?*"

Well, the strict and truthful answer to this query is that, first of all, nobody is born with a divine gift of violin-playing any more than he is born with a divine gift of walking, or of talking the language of his own parents. He has to learn all three.

About once in a hundred thousand times it happens that a player hits on the correct mechanical procedure by accident, just as about once in a hundred thousand times an engineer might guess the tensions of his steel bridge correctly. The engineer can only repeat his success by the miracle of a second lucky guess. In that respect the violinist has the advantage over him. When once he has hit on the right method, he recognizes its value by its artistic results. He tests it; and finds that, *with him*, it always works. That gives him the one thing for which he is searching—personal security on his instrument. The physical "why and wherefore" of the matter never crosses his mind.

But observe the vast difference between the two cases from the teacher's point of view! No one, out of a lunatic asylum, would appoint the guessing engineer to a university chair of engineering. The violinist, on the other hand, though he is certain to have all the artist's distaste for definition and all the artist's confusion as between *means* and *sensation*, is immediately labelled "genius."

Now, so long as he remains in the genius-business, there is not one word to be said against him. But as soon as that cap is stuck on his head, he becomes a potent money-drawing attraction *as a teacher*. And there the trouble begins.

He collects a great many expensive pupils, who come to learn "the mysteries of his art." In the class-room they all stand round him, open-mouthed with the words "How is it done?" And he has not the remotest idea of any satisfactory answer to these terribly searching words. He may "show them how," of course. He may play the actual passage under discussion. If it "comes off" the first time, all he can answer to their question is, "Like that." If it doesn't come off the first or second time, he has to try again, blaming his bow or perhaps the weather for his earlier failures. And even if he plays the passage finally—nay, even if he plays it finally with the most perfect and consummate art—his pupils have learned nothing technically. After the exhibition, one can only say that he differs from them in that he can play the passage sometimes, and they can not.

When this position is established as between teacher and pupil, the former's friends have to re-establish the balance with a good deal of clever window-dressing, all designed to cover up deficiencies in the stock-room behind. Out comes all the old rubbish and hocus-pocus about "genius" and "the divine mystery of the violin" and "the God-given faculty of expression"—all the old skimble-skamble stuff that

has done so much harm to the simple honest dignity of the violin for the past three hundred years.

It is easy to see the result of this system of "teaching." One has only to go through one's list of fiddle-playing friends to find a dozen victims. They are all men whose student-days have been devoted solely to imitating the personal peculiarities of their masters. The mechanical laws under which they have to work have never been explained to them. Nor have they ever been taught that the application of these laws must differ as between man and man, because no two arms and hands are exactly the same. Technique has always been held up to them as an artistic mystery, to be solved by guess-work and trick-work and "hard practice."

The consequence is that, when they cease paying for this mystical instruction and begin their careers as players, they are soon startled by the sound of a cog-and-ratchet working in their musical mechanisms. They get so far, and there they stick. Nothing helps them. They may increase their daily allowance of practising to an amount that would be almost criminal in any other profession. But it takes them nowhere. And the bedrock reason at the bottom of all this sea of difficulties is that they are attempting to substitute knack and guess-work for a knowledge of mechanics and their application through the human anatomy.

The last two paragraphs have been written in no spirit of carping criticism and certainly in no spirit of levity, but with a profound consciousness of the actual state of affairs in the violin-world of to-day. It is only during our own generation that the reproach has been lifted from the piano-world, and the technique of that instrument placed upon a solid scientific basis. No less is due to the older and more beautiful instrument, the violin. And it is earnestly hoped that this book may help many errant members of the string-brotherhood, whose wheels have stopped on strange unfriendly roads, by directing their attention back to the first principles of mechanism and of safe artistic travel.

So far for the living teacher and his pupil. There is, however, another large body of teaching-doctrine lying entombed in the various Violin Schools and Violin Methods that have already been published. A few of these are important works, written by the great players of the past. The great majority are timid recapitulations and adaptations of these few works. They have no importance at all.

But even in the best-known and most commonly used Violin Schools

the instructions are, in the main, false and misleading. This is a hard but true statement. And the ease with which its truth can be proved is an astonishing commentary on the readiness of the human mind to accept as proved that which requires some mental effort to disprove.

The authors of these recognized Violin Schools were undoubtedly great as players. But it does not follow that they were great, or even competent, as educators. Their impulse—the artistic impulse—was always to attach more importance to the end than to the means. This involved the ignoring of the one great factor in violin-playing, the mechanism of the human hand. And that factor, once ignored, left the art of violin-playing an intangible thing, scarcely capable of adequate treatment. Let us add that the writers of these books were all busy practical men, and that they certainly had neither the leisure nor the training to analyze sensation, or to define its physiological origin.

The Violin Schools which they strung together are primarily collections of musical matter arranged in order of increasing complexity and difficulty. The literary text, containing the instructions, is an afterthought, a mere record of the most obvious methods of dealing with the musical text.

These Violin Schools produced no fine players. The fine players produced themselves after a certain point. And as soon as they had sensed and put into practice the right method, they followed the example of their masters, and promptly consigned it to the limbo of *incommunicable sensation*.

Against these few fine players let us set the hundreds whose existence we have already hinted at, the hundreds who never get anywhere; but grind their very souls out, doomed to struggle along eternally in the dark. It is poor consolation to *them* to ascribe their failure to stupidity. And still poorer is the consolation if we tell them that success in playing is a "divine gift." That sort of thing is all very well when used by the local vicar who is introducing the soloist at a Penny Reading. On the lips of a serious violin-teacher it is—or rather, it should be—unpardonable.

In this connection we must not forget that, since the days when these Violin Schools were written, a considerable change has come over the material with which the violinist has to work, and also over his aims as an artist.

The finger-board was originally a good deal shorter; and very thick strings were usually fitted to the violin. For, though the player of Stradivarius's time was seldom required to go beyond the third posi-

tion, sonority was his ideal in tone-production. Opera was not yet in its heyday, and the influence of the church was still felt in the sombre tones of the string-family. However, with the ever-pressing demand for increased agility in the passage-work, the finger-board was lengthened. And the thick strings gave place to a thinner sort, which spoke more easily in the rapid passages, and could be held down with much less effort on the part of the player.

Unfortunately, the old disciplinary rules for the conduct of the left-hand were not changed at the same time. And we have gone on accepting them to the present day as a sort of gospel, without recognizing the fact that they are only an atavistic survival of primitive artistic conditions, and are actually detrimental in the twentieth century. For instance, the old saw "Let the fingers of the left-hand descend like little hammers" is still quoted, with its authoritative ring, by violin teachers. Yet it is quite certain that any player who follows this advice is ruining his chance of success.

Perhaps the most telling example of the difference between ancient and modern is to be found in the study and use of the vibrato. In the days before it was commonly employed the florid finger-technique was far less developed than it is now. The position of the left-hand, the function of its thumb, and the finger-action itself were all calculated without any reference to the means of expression *in the left-hand.*

But nowadays the vibrato must be available everywhere and at every time. It is the one condition superimposed on the florid finger-technique, and therefore the one element in violin-playing which must be studied and understood before an adequate technique can be developed.

Let us take a glance backwards.

Leopold Mozart protests vigorously in his Violin School against the frequent use of the vibrato. Spohr does the same. Mozart's directions for attaining it read as follows:

"The fingers of the left hand should make a slight, slow movement, not sidewise, but forward and backward, alternately toward the bridge and scroll of the violin."

Here is Spohr's description of the vibrato:

"It consists of a slight wavering of the tone alternately above and below the correct pitch, and it is produced by a shaking movement of the left hand toward the bridge."

The only comment necessary on the above two statements is the third statement that it is a positive scientific fact that the vibrato is a

movement of the hand *away* from the bridge. This we shall see and understand later.

It is only forty years since Courvoisier, after decrying the use of the vibrato altogether, summed up the position (in his *Violin Technique*) as follows:

"The whole real power of expression lies rather in the stroke of the bow; primarily in an intelligent accentuation producing rhythmic clarity, and then particularly in the increase and decrease of tone-power."

Finally, one may add that the late Dr. Joseph Joachim, in describing Molique's playing, used to assert that it was without any vibrato whatever. Nevertheless, he considered him "a most distinguished musician."

These two points—the modern alterations in the violin itself and the modern use of the vibrato—will give the reader a broad hint that an unprejudiced examination of violin-technique is an actual necessity. To arrive at the essential factors in the problem, one may appear at first to be rather destructive than constructive. But the chief aim of this book, as was said at the beginning of the chapter, is to help violin-students, that is to say, all who study the violin, whether as soloists, as teachers, or as pupils. And the best means to attain that happy end is to remove from one's mind all the flim-flam as to the "mystery" of the instrument. There is nothing occult about the violin. Its acoustic and physical properties are, as far as they concern the player, simple and easily ascertained. The general laws of mechanics are equally well-known. And it only remains to join these two links by the third and more delicate link, the action of the player's body.

CHAPTER II

THE LEFT-HAND: THEORY

THERE are two ways of playing the violin—a right way, that conforms to mechanical laws; and a wrong way, that does not. These laws, of course, govern all our bodily actions. And we may be quite sure that, if we can not easily perform or repeat some simple action, we are either defying the laws or ignoring them. We are, in fact, trying to do the thing in the wrong way.

Now, the actions which are used in violin-playing are all very simple. But they are not what are called "hereditary movements." They are *new* to us, and they can not be learned without mental analysis of their nature. In addition, the violinist has to combine and recombine many such movements with great rapidity, clearness, and directness of purpose. Therein lies his chief difficulty.

It must be confessed, then, that violin-playing is a complicated feat; so complicated, indeed, that it is useless to waste years of blind experimental work in the hope of solving its problems. Unless we first thoroughly understand its nature and the conditions of its success, we are merely "beating the air."

It follows that the first thing to do in this chapter is to lay down general principles. And this treatment of the subject is the more necessary because no two pairs of hands have exactly the same measurements; nor can they be fitted into the same positions. Violin-success by that road is a forlorn hope. When once the general principles are grasped, the hand, in complying with them, will find its own positions. These physical adaptations will be dealt with in the next chapter. Meanwhile, we shall devote this one to a consideration of the right way to play the violin, and to an explanation of the reasons why this way is right and all others wrong.

There are three essentials in violin-playing, so far as the left-hand in the first position is concerned:

1. A telling vibrato, which will not hamper the finger-action.
2. Comfort, ease, and security.
3. Independence, accuracy, and speed of finger-action.

The vibrato, as we have already said, is technically a device superimposed upon the florid running-technique. It is therefore useless to attempt to found a running-technique until we are clear as to the action by which the vibrato is produced. And that, again, can not be studied till we understand the nature and purpose of the vibrato.

Let us, then, devote a few pages to this examination. Let us try to ascertain the constitution and the æsthetic aim of the vibrato.

Spohr, as we have seen, calls it a wavering of the tone alternately above and below the correct pitch.

The word "wavering," however, does not at all describe the vibrato which is most commonly heard. It is rather a violent excitement, whose principal effect is to make the timbre of the instrument more penetrating, while obscuring the beauty of the individual notes of a passage. Æsthetically it is unpleasant to the last degree.

Besides this vibrato, there is another kind that is heard only a little less frequently—a sort of slow rocking sound, which adds nothing whatever to the musical effect, which is not particularly expressive, and which, repeated over and over again, eventually maddens the listener by its futility.

Let us say at once that the sole object of the vibrato is to enhance the beauty of an already existent sound. Incidentally it draws attention to the notes on which it is used. It gives them, at the discretion of the player, an added emotional thrill; and so contrasts them with the notes which have no vibrato. But the moment the vibrato obscures the true sound of any given note, it becomes an ugly nuisance. Furthermore, the true vibrato—that is to say, the beautiful vibrato—must never give the impression that the pitch is being shifted, either up or down. It must lend a ringing sound to the note on which it is used. And this ringing sound can only be appreciated as a continual return to true pitch. In other words, the ear receives the repeated impression of the correct-pitch-note; and so telegraphs to the mind the impression of that note plus the emotional thrill of the vibrato.

An important question immediately arises. If this constant return to true pitch is a necessity to the ear, where is the return to be made from, above or below? Is the ear to be disturbed by a continual sharpening or flattening of the pitch?

The answer to this question governs, and is fundamental to, the whole theory of the vibrato. Differences of pitch always exist to the ear as from below upwards, and never as from above downwards. Diatonic and chromatic differences in pitch are always so judged. And

the smaller differences, commonly known as "being out of tune," come under the same general law.

For instance, if a singer is singing too flat, we instinctively place ourselves, not on the higher level of correct pitch, but on the singer's lower and incorrect level. We mentally wish him *to go up*, while we accompany him on his journey, so to speak. We can not ask him *to come up*, because we do not project our minds as being already at the higher level. Similarly, if the singer is singing too sharp, we naturally take the converse position. We assume that we are below him, and mentally wish him *to come down*, not *to go down*, to our own level.

Now, the result of this habit of mind is very obvious. If we have the choice of two vibratos—the true note plus a continual sharpening, and the true note plus a continual flattening—it is plain that the sharpened vibrato will leave an impression of uncertainty on our minds, for the simple reason that, looking upwards, we shall be inclined to regard the slightly sharpened note as a new and disturbing true-pitch-note. On the other hand, the flattened vibrato leaves our minds quite free from any uncertainty as to pitch. We naturally judge it from below; and we look upwards without effort, recognizing the continual iterations of the upper portion of the vibrato as the correct-pitch-notes.

Here we have the true and beautiful violin-vibrato. And from these subtle, but quite indisputable, premises we draw the conclusion that the vibrato is *a rapid alternation of correct and flattened pitch.*

Fig. 1

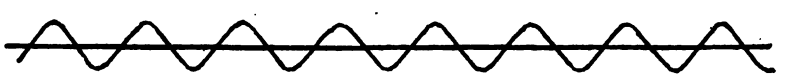


Fig. 2

This vibrato is illustrated in Fig. 1, while Fig. 2 shows the line of the unlovely variety.

There has been much discussion as to how the vibrato should be produced, and a great deal of dismal rubbish has been written on the subject. The main bone of contention is whether it should be made by means of a swing from the wrist or from the elbow. Against the latter method it has been urged that it leads to cramp. But this is not so. The hand is moved by muscles in the forearm: the forearm by muscles in the upper-arm. Can anyone be so foolish as to assert that the

muscles of the upper-arm are liable to cramp, while those of the fore-arm are not? If the cramp exists, it can not be because of any inherent tendency thereto in the muscles of the upper-arm.

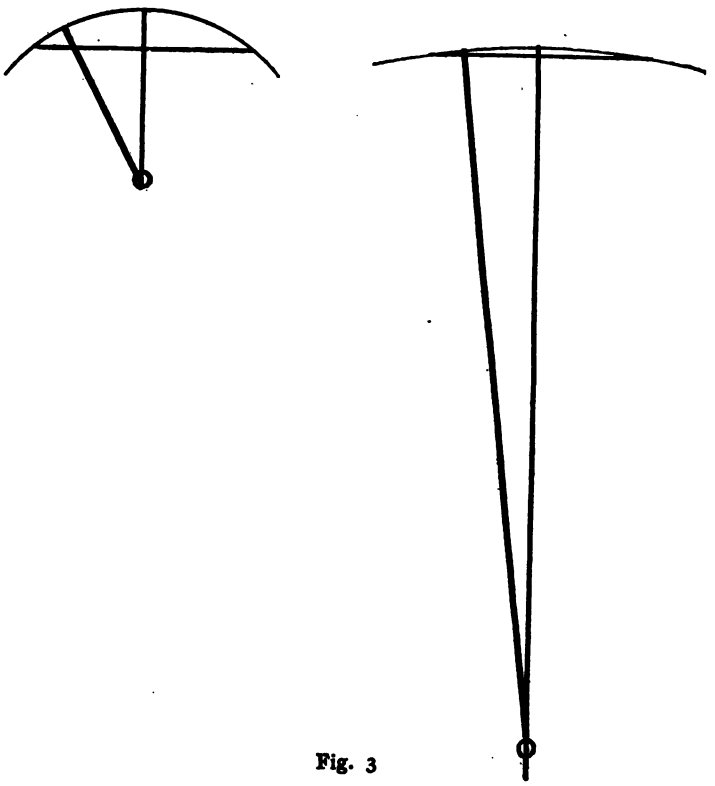


Fig. 3

It has sometimes been claimed that the larger muscles of the body are intended to make only wide movements, and that therefore the hand-vibrato must be better than the arm-vibrato.

Now, it is true that the muscles which move the limbs are of larger size than those, for instance, which are used to move the fingers laterally. It is also true that the extra length and power of these large muscles are specially fitted to move long limbs over a long, and therefore normally slow, course. But it does not follow that they are therefore incapable of developing high speed in the limb moved. Quite apart from this, the actual speed in inches per second which the fore-arm attains when performing the vibrato is no greater than the ordi-

nary speed of that limb. We must not be deceived by the fact that, in the vibrato, we are dealing with to-and-fro movements; and we must remember their exceeding shortness.

In a word, a muscle may be specially adapted to produce wide movements in a limb. But that is no reason physiologically why it should not also produce small movements.

The illustration (Fig. 3) will make the difference between the wrist-swing and the elbow-swing plain at a glance. The shorter diagram, of course, represents the wrist-swing, the longer, the elbow-swing. And the point to notice is that, though the two swinging-distances are the same when measured horizontally, the curve above is much more rounded in the wrist-swing than in the elbow-swing.

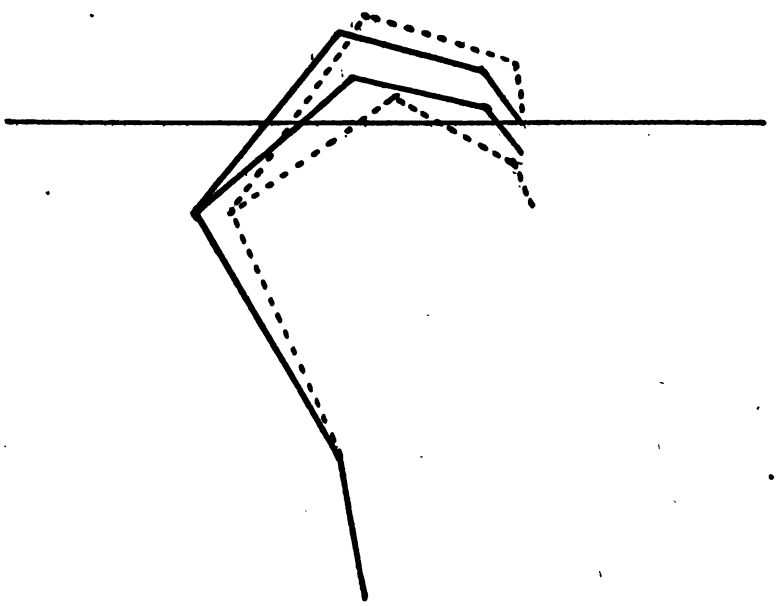


Fig. 4

In other words, if the hand is swung to-and-fro from the wrist, the arc described by the knuckles is far less flat than it would be if the hand were swung from the elbow. The consequence is that while one finger is producing the vibrato, the others are being alternately raised and lowered rapidly, in vertical relation to the finger-board.

But worse remains behind. While the fourth-finger-side of the hand is lowest, the first-finger-side is highest, and *vice versa*. This im-

mediately confuses the mind as to the striking distance between finger and string. And the result is that, as soon as the passage-work becomes at all complex, the player is hampered in what should be the free application of the vibrato.

It may be answered that the arc over which the knuckles are swung is so short that there can be no appreciable difference between the two methods. But, observe! The strings are not stopped with the knuckles, but with the finger-tips. And these are some two or three inches from the knuckles, and at right-angles to the plane of the hand.

Fig. 4 shows us exactly what happens. There are two solid black fingers, of which one lies on the string and the other is free. Both are in the backward position. Then there are the two corresponding dotted fingers, one on the string and the other free, both in the forward position. Note the small movement of the knuckle and the complete change of position of the dotted free-finger in relation to the dotted string-finger and the solid free-finger. And then remember that, for the greater part of the time, there are three free-fingers, each one of which will momentarily be assuming a different position relative to the string-finger. If this should appear puzzling at first sight, consider that *the tip* of the string-finger is held in practically the same place, both vertically and longitudinally; that there is constant change of relative position as between it and the body of the hand; but none as between the free-fingers and the knuckles.

Now, the distance from elbow to knuckle is four times the distance from wrist to knuckle. It is therefore obvious that, by swinging the hand from the elbow, this vertical movement of the knuckles and the free-fingers is reduced by one-fourth. In fact, it becomes a negligible quantity.

Thus we see that the elbow-swing gives us a more precise and better controlled finger-action, as well as the power to start and to stop the vibrato without fear of upsetting the other fingers. This point alone should be enough to decide our choice as between it and the wrist-swing. But there are still other arguments in its favour.

If the vibrating hand is swung from the wrist, there is no possible way of ensuring that it will swing to-and-fro twice in succession over an arc of precisely the same length. There is nothing but the will of the player to decide just how far forward or backward it shall move. The result is that the pitch of the note is often raised above truth, and the wave of vibration is of uneven length. This gives a jerky sound, which is liable to get worse as the playing continues. For the forearm-

muscles are bound to tire, burdened as they are with the task of equalizing the swing-length.

These difficulties disappear when the hand is swung from the elbow. For the thumb then acts *automatically* to limit the length of the swing.

It is matter of common observation that players who use the wrist-vibrato frequently grip the violin tightly with the jaw, in order to free the hand for swinging. The results are dire. In the human body there is a natural tendency to equalize things between the two sides, either by a similarity of muscular contraction, or by a balanced distribution of weights. So that when the left collar-bone is held continuously raised, it is not long before the right collar-bone also raises itself—the very worst thing that could happen for the bow-arm. Even were the left shoulder alone held raised, the effort would be distressing. When both are lifted, it is utterly impossible for the player to maintain calm control over himself and his instrument.[1]

Furthermore, when the violinist grips the instrument tightly with the jaw, he also contracts his throat, particularly at crucial moments in the music. This interferes with proper breathing. It also puts an added strain on the heart, which is still further intensified by the pressure on the jugular vein, caused by the raising of the left shoulder and the pressure of the violin against the neck.

The total result of all these mistakes on the player is a desperate state of fright. Nine times out of ten this can be explained by the physical factors which we have just described. But memory alone can engineer a collapse—the subconscious memory of past struggles and pounding arteries.

Let it therefore be said again, explicitly, once for all. ***Anatomically and mechanically the proper method of producing the vibrato is by swinging the forearm and hand from the elbow.***

We can now turn to the florid left-hand technique, with the purpose of examining and defining its mechanism. In the course of this examination it will become abundantly clear that correct left-hand technique renders the performance of the wrist-vibrato absolutely impossible, and that those who advocate this vibrato—or, indeed, any but the arm-vibrato—are advocating a technique that is contrary to mechanical law.

In order to clear the ground for this study of the florid left-hand technique, it is necessary to draw the reader's attention to two facts,

[1] See page 34 for some remarks on neuritis, or, as it should be called ninety-nine times out of a hundred, vocational cramp.

neither of which, perhaps, he has hitherto considered in relation to violin-playing.

1. When an object in motion is suddenly arrested, its energy will expend itself either by transformation into heat, or (if the disposition

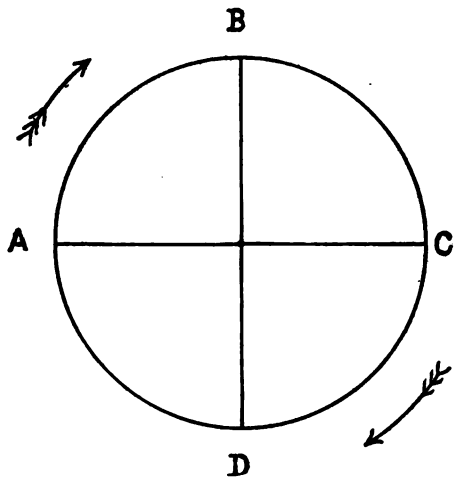


Fig. 5

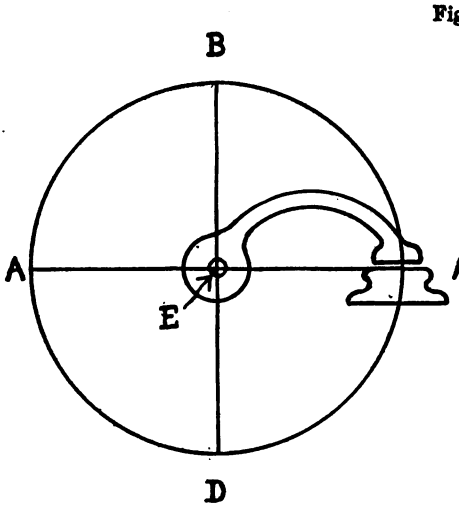


Fig. 6

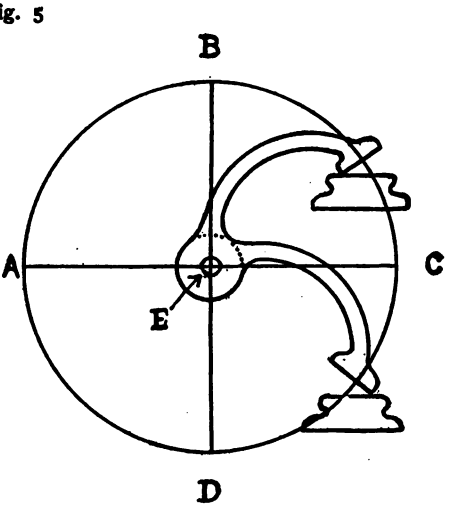


Fig. 7

of weight is favourable) in a continuance of the motion round the point of arrest.

This can be illustrated familiarly by the action of a hammer. If one strikes a violent blow with it upon an anvil, one experiences a

stinging smack in the palm of the hand. The downward motion of the hammer comes to a sudden stop when it strikes the anvil. But the energy seeks and finds an outlet in the upward motion of the handle, pivoting round the hammer-head at its point of contact with the anvil.

2. The pivotal point from which a blow is to be delivered, or from which pressure is to be exerted, must (if it is to be effective) be in the same plane as the surface on which the blow is to be struck.

This, again, may be illustrated by the action of pounding a table. To do so effectively, one instinctively places one's elbow (the pivotal point) in the same plane as the surface of the table. Otherwise the knuckles would be grazed. If one wishes to pat a friend on the back, one takes exactly the same instinctive precautions—only it is with the wrist as the pivotal point this time.

Let us emphasize this matter of the pivot by means of three very simple diagrams, Figs. 5, 6, 7.

Travelling clockwise round the circle in Fig. 5, one proceeds from left to right along the semicircle A C; and from right to left along the semicircle C A. Along the semicircle D B one ascends; along the semicircle B D one descends.

If one divides the circle into four equal parts, the points A, B, C, D are the only theoretical points at which, if one stopped, one would be facing in a direction parallel either to A C or to B D. At all other points one would face slantingly to right or to left.

Figs. 6 and 7 show an anvil and a hammer; the latter pivoted at E, the centre of the circle.

In Fig. 6 the surface of the hammer is placed at C in the same plane as the pivot. The hammer would therefore strike an effective blow, expending all its energy downwards.

In Fig. 7, however, the anvil is placed either above or below the plane A C. It would therefore strike a blow, part of whose force would be directed to the right or to the left. Its downward efficiency would be impaired.

Now for the application of this little lesson in natural philosophy.

First, consider that the finger is the hammer, while the string and finger-board are the anvil.

Next, notice that the finger pivots from the knuckle. To do this, look again at Fig. 6, and think of the knuckle as E, and the finger-tip as the hammer-head.

Is it not obvious that, for a stroke of maximum efficiency, both

knuckle and finger-tip must be in the "striking-plane," that is to say, on the horizontal line A C in Figs. 5, 6, 7?

Let us suppose for a moment that they are not. What will happen?

The string and finger-board (in other words, the line A C) can not move out of the horizontal. They are fixed. But the knuckle (that is to say, the pivot E) can and will move. It is not fixed. Consequently, when the blow of the finger descends on the finger-board, the knuckle will be raised; just as, when we strike a blow with a hammer on an anvil, the handle flies up and strikes back at our hand. So that, looking again at Fig. 6, the finger-tip would remain where the hammer-head is drawn, but the knuckle would be raised, and would take up a position somewhere between E and B.

Now, this raising of the knuckle is the one thing to be avoided. Directly it takes place, the body of the hand will try to prevent it, by pressing the thumb against the neck of the instrument. And, when once that gripping posture of the hand is assumed, farewell all freedom and independence of finger-action. Nor must we overlook the fact that this loss of freedom will extend all the way down the fingers, from finger-tips to wrist. For the body of the hand is, after all, only a continuation of the fingers, enveloped in muscle, skin, and so on.

It need scarcely be said that violinists *do* raise their knuckles. They raise them, and so become inevitably enmeshed in the consequences. The details of these struggles and miseries hardly call for description: they are so painfully known to many players. However, this may be said. That the attempt to prevent this elevation is always made by means of clutching with the thumb; and that one of the objects of this chapter is to show how the raising can be avoided without recourse to that faulty method.

There is another reason why the knuckle should always be kept in the horizontal striking-plane. It is a reason rather of the mind than of the body. Yet it is of the greatest importance when we come to the practical business of playing the violin.

The mind of course controls the finger-stroke. And, if the player is to have mental comfort and safety at his work, he must establish a sort of automatism in the finger-action. The finger, in a way, will *expect* to find the string at the point of its greatest efficiency in the stroke. If it does not meet the string there—that is to say, if the knuckle is either too high or too low—this automatic state will never exist. And the inevitable result to the player will be surprise, insecurity, and, in trill-work, actual locking of the muscle.

Plate 2

Plate 3

Let us then fix firmly in our minds this point of theory: that the knuckle and the finger-tip must be kept in the horizontal striking-plane; and that, as the point of contact between finger-tip and string is immovable, while the pivoting-point of the knuckle is movable, it is to the latter that the chief attention must be paid.

There is, of course, only one way in which the height of the knuckles *can* be altered. There is only one way in which they can be raised or lowered. And that is by means of an alteration in the curvature of the finger. We shall explain this in more detail later. Meanwhile, the practical question arises how the hand is to be held, so that it will satisfy these theoretical conditions.

The best way to answer this question is to invite the reader's attention to Plates 1, 2, 3.

If he will, with his own hand, assume the positions illustrated in these plates, he will recognize that Plate 1 is the "correct position" plate. The knuckle, in this plate, is held in the striking-plane. The weight of the hand is directed neither backwards nor forwards. It has no influence whatever on the finger-action; but allows the finger to touch and hold down the string with the minimum of effort and the maximum of efficiency. The result is mental satisfaction, inducing a complete sense of safety.

Compare this with Plates 2 and 3. Plate 2 shows the hand tilted, so that its weight is thrown forward on to the nail. The knuckle is above the striking-plane. Plate 3 shows the weight of the hand hanging backwards from the finger-tip, while the knuckle is far below the striking-plane.

With the hand held as in Plate 1, the free fingers relax and are ready for action. Thus we have the four essentials (comfort, ease, security, and independence) upon which the other two (accuracy and speed) depend. But note that, the moment the position is abandoned —the moment the knuckle is either raised or lowered—this feeling vanishes. At once insecurity steps in, bringing with it the fatal tendency to grip the neck.

Having settled this matter of the correct hand-position, we now pass to the question which rises naturally in the reader's mind—the question how this position is to be assumed and retained.

We have already noted the evil effects which are produced by gripping the violin with the jaw. It is unnecessary and dangerous. Provided the instrument is rested, at its one end, on the collar-bone, and, at its other, on the thumb, only the least touch of the jaw is

needed to keep it in position. And this is the proper way to hold the violin. It gives the instrument two points of support underneath, while the player's fingers are operating above. See Fig. 8 for its diagrammatic illustration.

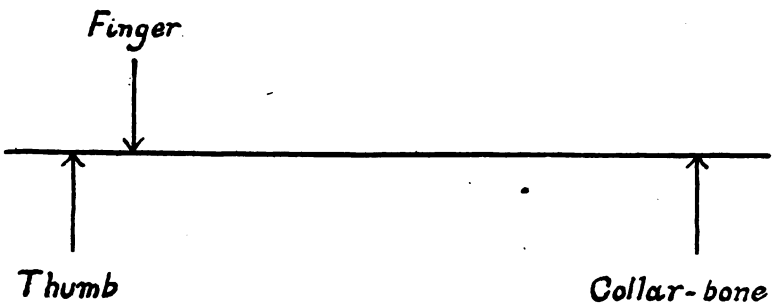


Fig. 8

It is important to observe that, if one wishes to rest the neck of the violin on the thumb without gripping, and if one wishes to guard against any tendency of the neck to slip down into the crotch, the thumb must be held relaxed, in order that a fleshy pad may be formed. With the thumb so relaxed and held, the neck of the violin rests on the pad at the lower end of the second phalange.[1] This position, which is easily found, will be more particularly described in the next chapter. When once it is found, the player will experience a feeling of ease and security, which contrasts strikingly with the sense of effort and danger which comes from gripping the violin between the thumb and the hand.

Plates 10 and 11, which must be viewed as a pair, give an excellent idea of the difference between the two positions. Plate 10 shows the correct position, with the violin resting properly on the fleshy pad of the thumb; while Plate 11 shows the incorrect position, with the thumb clutching the neck.

The whole art of the technique now lies in performing the finger-action in complete independence of the thumb.

The reader must here differentiate between what one may call a pincerlike action and the action shown in Fig. 8. In the pincer-action there is pressure up as well as down. But, in the correct violin-action (Fig. 8) the thumb must *not* press up. It must act solely as a support; and the entire pressure must be from the finger downwards. The

[1] The phalanges are the bones of the fingers and thumb. The first phalange is that next to the body of the hand.

Plate 4

Plate 5

object is, of course, to give the hand—the playing-medium—complete independence from the thumb.

In order to find the correct height for the knuckle, one has only to remember that it depends on, and is governed by, the degree of curvature of the finger. A glance at Plates 4 and 5 will make it clear that the flatter the curve of the finger, the lower the position of the knuckle. And this lowering in the position of the knuckles is attained by moving them backwards from the wrist, as the curve of the finger is flattened.[1]

The method of putting this theory into practice is as follows. The neck of the violin rests on the thumb. The finger-tip presses down the string; while the knuckles move backwards from the wrist, until the knuckle of the playing-finger is in the horizontal striking-plane. There should be no difficulty at all in hitting on this exact point. In practice it is recognized almost instinctively. And, once recognized, it is instantly seized, because of the ease, effortless safety, and independent power that it affords.

The degree of curvature naturally differs as between finger and finger. This is not so much due to the different lengths of the fingers, as to the fact that the knuckles are not disposed straight across the hand, but slant upwards from first to second, and downwards towards the fourth finger. Incidentally it may be remarked that freedom of the hand and independence of the fingers cause a surprising improvement in the playing of those violinists who have a short fourth finger, or one set very low in the hand.

As soon as the knuckle has been brought into the striking-plane, it is retained there simply by holding the wrist immovable. This puts a wrist-vibrato and a raising of the pitch out of the question. For, if the finger is correctly posed upon the string, it is physically impossible to roll the tip forward. The finger can not be further *curved* without relaxing the wrist. It can only be *straightened* at the third joint by moving the forearm back.

The beginning of the vibrato is therefore always a movement *away* from the bridge.

The vibrato itself must be applied by setting the wrist, and then moving the forearm backwards to the full extent allowed by the thumb and forwards to the full extent allowed by the first joint of the finger. The knuckle, of course, must never leave the striking-plane.

It now only remains for us to say that the old maxim "Let the

[1] The thumb is held midway between the knuckle and the tip of the second finger.

fingers descend like little hammers" is mere thoughtless nonsense. The people who formulated that maxim left the anvils out of account. They also ignored the physical results of contact between hammers and anvils.

But, one may ask, why in the name of common-sense *should* the fingers descend like little hammers? Why should they violently assault the strings in this way? Their function is to hold the strings down to the finger-board, not to give a xylophone performance. That method of attack leads to an excessive over-thickening of the skin on the finger-tips—an over-thickening that Nature herself sets up to protect the violinist against his constant bugbear, exposure of the nerve. Indeed, if one had to describe the proper approach of finger-tip to fiddle-string, it would not be as one of "hammering," but rather as one of "sensitiveness," even of "inquisitiveness."

Furthermore, the old practice of keeping all the fingers on the strings until it was absolutely necessary to raise them, is diametrically opposed to correct principles. The practice is merely an awkward attempt to counterbalance the insecurity that comes from faulty technical methods.

The general rule is that every finger must be raised as soon as the next note has been located. And the simple reason for this rule is the fact that, with all four fingers down, there would be four different knuckle-heights.

The only exception to this rule is to be found in the details of passage-work, such as trills, where there is an immediate return (1) from a higher note on the same or on a higher string; (2) from a lower note on a lower string, back to the preceding note.

The last point to be dealt with in connection with the question of finger-curvature and knuckle-height, is the method of crossing the strings. This is ordinarily effected by reaching out with the fingers. And the result of this is, of course, that their curves are altered. The correct way is to swing the left-arm more or less under the instrument. If this is done, the integrity of the left-hand action is preserved; and we have another strong argument against the habit of gripping the violin tightly with the jaw.

CHAPTER III

THE LEFT-HAND: PRACTICE

THE practical side of the simple left-hand technique can be summed up in the two words "muscular control."

The aim of the present chapter must therefore be to lay out a scheme of muscular training. And the student, besides following it out, must keep its importance clearly before his eyes. Its object is, not only to give him the power of contracting any desired muscle alone, but also the sense of muscular relaxation; and to give him both so completely developed that he will be able to contract certain muscles while relaxing others, and to sense the relaxations just as keenly as the contractions.

The words "muscular contraction and relaxation" thus amplify and explain the words "muscular control." Only it must be noted that, in the delicate art of playing the violin, the great difficulty is to acquire a vivid consciousness of the difference between contraction and relaxation. Yet the unerring faculty of discriminating between the two processes must be acquired. Otherwise, there is no hope of banishing unwilled muscular activity. To put the matter familiarly: if one does not *know* when a muscle is contracted and when it is relaxed, that muscle will be apt to do as it pleases.

If there is any doubt of the fact that muscular movement is often quite *unconscious*, it can be satisfied by a simple experiment. Ask a friend to allow you to raise his arm. Then, after raising it, suddenly let it go. In all probability your friend's arm will remain in mid-air, kept there by his own unconscious muscular action. For, the very suggestion that you are going to raise his arm is enough to set his motor-apparatus in action, without any conscious intention on his part.

Our scheme of muscular training, then, must have as its object the acquisition of this sense, so vital to the violinist. Of the ten exercises which we shall prescribe for the student, the first seven are directed solely to this end. The last three are practically a basic study of the left-hand technique; only that the right-hand is substituted for the actual violin. This change is made, partly because the exercises can

be seen, and therefore criticized, better without the violin, and partly because sensation is more acute through the right-hand than through a wooden fiddle-neck. This is, in fact, a matter where it is advisable to let your right-hand know what your left-hand is doing.

Not until these exercises have been thoroughly practised is the violin to be taken in hand. Then, when it is, the practical business of the finger-technique can be begun. When that point has been reached, in order to concentrate the student's mind on the objects that he should keep in view, we shall tabulate them; and, to differentiate them from the ten exercises, we shall letter them, A, B, C, D, E, F, G.

The above few paragraphs will give the student a rough general idea of what we propose to do in this chapter. But before we present him with the ten exercises to which we have alluded, there are some facts in connection with the human hand to which his attention should be drawn.

The hand is not a solid structure. Violinistically it consists of four bony shafts, extending from the knuckles to the bones of the wrist. These shafts are bound about with muscles; and, together with the tendons attached to the visible part of the fingers, they are covered with skin.

For pugilistic purposes the hand may be regarded as a solid mass. For our musical purposes we must regard it quite differently. We must not think of the fingers as being worked from the top of a solid fleshy wall. We must think of each finger as extending from nail to wrist. In a word, we must recognize the fact that, by setting the joints, we can "lock" into one piece the whole structure from finger-tip to elbow.

But note here an important point. When this "setting" or "locking" has been accomplished for one finger, it by no means involves the "setting" or "locking" of the other three. Their muscles, as well as the thumb-muscles, can be and should be relaxed as far as possible. And this should be done so much as a matter of routine, that the violinist acquires a habitual mental picture of his own hand as having at any given moment only one finger—the playing-finger, which, for him, extends from the finger-tip to the wrist. Half the troubles of violinists arise from their contracting the muscles which hold the four hidden shafts together; and so handicapping themselves with a rigid hand.

The force of this last paragraph will very soon become evident to the student when he begins to experiment with an actual violin. For he will find that, as the activity shifts from one side of the hand to the other, there is a corresponding lateral bending of the wrist. This is

Plate 6

Plate 7

quite natural and proper. It is, in fact, a sign of grace—a sign that he is proceeding along the right road to violin-success. Nor should it be hard for him to understand *why* this lateral bending must take place. If he will look at Figs. 9, 10, 11, and observe what happens to the block when its weight is evenly balanced (Fig. 9), or is shifted to the right (Fig. 10), or to the left (Fig. 11), he will have no difficulty in explaining to himself the movement of his wrist.

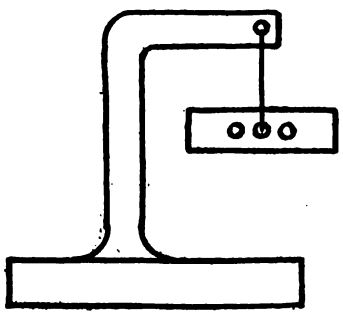


Fig. 9

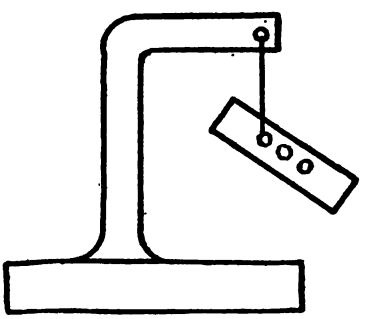


Fig. 10

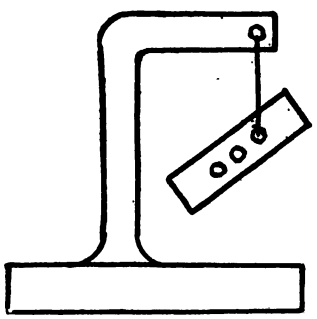


Fig. 11

We have already alluded to the fact that the knuckles do not run across the hand in a straight line. Their order, from highest to lowest, is as follows: second, first, third, and fourth. This irregularity we have seen to be intimately connected with the question of getting the knuckle into the horizontal striking-plane. Its importance to us now lies in the fact that, when we are "setting" the finger and forearm, it involves a different adjustment for each finger in relation to the thumb.

The hand is held diagonally to the neck of the violin. Provided it remains stationary, the fingers will all assume different curves, in order to reach their points of true intonation. It is, however, essential that

each finger should take the strongest curve and the one best suited to it. In practice it comes to this: that there must be a slight shifting of the hand forwards or backwards relative to the thumb, so that the new finger may be pressed down with the greatest ease and efficiency. And this can only be done if the muscles which join the thumb to the hand are trained to relax, and so to permit each finger-movement to take place at the moment that the preceding finger is raised.

Another pair of pictures may be grouped here, to show correct and incorrect positions of the first finger. These two pictures (Plates 12 and 13) must be compared with our two earlier plates (10 and 11) which showed the right and the wrong way of holding the violin. Plates 12 and 13 give us, in fact, the finger-results of the correct and incorrect methods of Plates 10 and 11. In Plate 12 we see the finger properly posed and relaxed, when the neck of the violin rests upon the thumb. While Plate 13 shows us the faulty position of the first finger, often caused by "clutching" with the whole left-hand.

Now that we have cleared the ground by these preliminary considerations, we are at liberty to follow them up by the ten exercises which we outlined at the beginning of the chapter. They are here all grouped together; but the student may be reminded of the fact that the first seven differ in intention from the last three. Performed away from the instrument, and therefore without the distraction of sound, they will give him an instinctive perception of what is meant by the words "muscular control." And even after their validity has been tested on the violin, it will be beneficial to go back and try to perfect them, simply as muscular exercises.

EXERCISE I

Raise the arm slowly until it is parallel with the floor, then allow it to fall limply to the side. This should be done both to the side and to the front, and care should be taken not to raise the collar-bone.

The object of this exercise is to develope the sense of what is the least effort necessary to raise the arm from its zero, that is to say from a state of complete relaxation. After it has been practised, it will be well to get someone to raise the arm, and, without warning, to let it go free. As it is not yet certain that the arm will fall, we go to the next exercise.

Plate 8

Plate 9

EXERCISE 2

After raising the arm slowly as before, place the right-hand under the elbow. Then relax the shoulder-muscles, allowing the dead weight of the whole arm to rest in the right-hand. Remove the right-hand, and at the same moment support the arm by the shoulder-muscles, without allowing it to fall.

Repeat this exercise from eight to ten times, concentrating the attention on the moment of change from the one state to the other, and noting the difference in sensation at that moment between the relaxed arm and the arm which holds itself aloft.

EXERCISE 3

Raise the arm in front of you until it is at an angle of 45° to the floor. Then, after raising the forearm slowly until it is nearly perpendicular, let it fall by sudden and complete relaxation of the biceps.

In all these exercises the greatest care must be taken not to help the fall of the limb. It must fall of its own dead weight. In performing Exercise 3, there is often a tendency to let the whole arm fall at the moment that the biceps is relaxed. And one of the chief benefits to be derived from this exercise is a clear sense of the steady effort necessary to hold the upper-arm aloft, during the contraction and relaxation of the biceps.

EXERCISE 4

After raising the forearm, place the right-hand under the wrist. Then, by relaxing the biceps, allow the weight of the forearm to rest in the hand. Remove the right-hand, catching the forearm at the same moment by biceps-action. Repeat from eight to ten times.

This exercise resembles Exercise 2 in that it has for its object the mental differentiation between contraction and relaxation at the moment of muscular change.

EXERCISE 5

Rest the finger-tips on a table, keeping the forearm parallel with the floor. Raise the thumb, and then by sudden relaxation allow it to fall.

If there is complete relaxation, one will have a clear sense of the weight of the thumb, although it is very slight.

EXERCISE 6

Rest the outer side of the hand and the forearm on a table. Raise the thumb, and then by sudden relaxation allow it to fall.

EXERCISE 7

Hold the forearm perpendicular, and, with the thumb relaxed, place a finger of the right-hand just below the second joint, as shown in Plate 6. From this position bring the thumb slowly up to the perpendicular, as in Plate 7, involving only the first phalange in the movement (which is made against slight resistance from the right-hand), and exerting no effort with the rest of the thumb. Now relax the thumb suddenly, when the pressure of the right-hand will return it to the position of Plate 6.

The object of this exercise is to gain mobility of the thumb, without the tendency to "clutch," which arises from activity of the second and third phalanges.

EXERCISE 8

Hold the forearm perpendicular, while the elbow is resting on a table. Take the second phalange of the thumb between the thumb and forefinger of the right-hand, exercising therewith a slight downward pressure. Then move the forearm backwards and forwards as in the vibrato, slowly at first, and then gradually quicker. The movement must be very short, and the wrist and finger-joints must be held immobile.

EXERCISE 9

Place a curved finger on the right-forefinger, as in Plate 8. The finger must exert a slight pressure, but the arm must neither depend from the finger nor be lifted so as to nullify the pressure of the finger. In other words, the knuckle must be held exactly in the striking-plane. A correct sense will thus be gained of the finger-and-arm as one piece. A fuller appreciation of this will come when the student has experi-

Plate 10

Plate II

mented in changing from one finger to another—always bringing the knuckle into the striking-plane. It is only when this perception of unity as between the finger and the arm has been established that the vibrato can be attempted.

EXERCISE 10

The same as Exercise 9, except that the thumb is first placed against the right-forefinger, which exerts a slight downward pressure on it, corresponding to the weight of the violin.

If the thumb is held relaxed (see Plate 9), the right-forefinger will, starting at the third joint of the thumb, press down until it rests upon a fleshy pad that forms on the inside of the second phalange of the thumb. If the thumb is held stiffly, its rigid tendons will prevent the pad from forming, and the forefinger (or the neck of the violin) will slip downwards.

This exercise is difficult: the greatest patience is needed in order to master it. The thumb has to allow the hand to make its necessary adjustments; for it is on these that the mental conviction of unity as between the finger, the hand, and the forearm depends. Furthermore, it has to "pursue its policy of non-intervention." It has to serve as a mere support. Unless it is isolated in this way, the violinist will never be able to differentiate sharply between it and the finger-plus-arm, which is his playing-medium.

There are only four fingers to be trained. And, once they act perfectly in any and every order, the most difficult part of the left-hand violin technique has been learned. But, as this portion of the scheme of study is of crucial importance to the future of the player, it is advisable that he should make his first experiments with Exercise 10, then test each finger with the vibrato, taking care that it should always be started in the forearm, ***and not in the hand.***

If the vibrato is not successful, it is a sure sign that some element of the technique is wrong. The wrist may be flexible, or the knuckle misplaced. The fault may lie in the fact that the thumb is unconsciously interfering; or the impulse may be originating in the hand instead of in the arm.

Whatever the cause, there is only one remedy—renewed practice, with increased watchfulness as to what the muscles are and are not doing.

When some degree of success has been attained, it will be well to

study changing from one finger to another, and to make the change through all the possible finger-combinations, such as:

3 2
3 4
2 3
2 4
4 2
4 3
2 1
3 1
1 2
1 3
4 1
1 4
1 2 3 4
1 3 2 4

These exercises must all be performed with the greatest deliberation. Probably fifteen seconds will be needed for each finger. And the attention must not be allowed to flag even for the fraction of a second. This is particularly necessary at the moment when the balance is shifted from one finger to another. For it is at that moment that the danger of stiffening lies.

This is the point at which the student may first be allowed to take up his violin. And it is here that, according to our plan, we intend to tabulate for him the objects on which his attention must be concentrated. They are:

A. The use of the thumb to support the violin.
B. The best curve for the finger to assume.
C. The pose of the knuckle in the striking-plane.
D. The retention of the knuckle in the striking-plane.
E. The complete relaxation of all the fingers except the playing-finger.
F. The dissociation of the thumb from all finger-action.
G. The vibrato.

Let it be said at once that this list, though tabulated for convenience of inspection, must not be regarded as a series of isolated points. The first six (A to F) are, it is obvious, mutually dependent on each

Plate 12

Plate 13

other, and all concern the running-technique. It is true that the vibrato (G) is, in a way, an addition to the others; but it is an addition that is clearly dependent on them.

The whole series, in fact, is interlocked. And it is essential that, when the student takes up his violin to make his first attempt, he should regard the whole series *as one action*, or perhaps rather as one action having seven interdependent parts, A, B, C, D, E, F, and G.

Now that the violin is in his hand, the student will doubtless ask what it is exactly that he is supposed to do. The answer to that is that he is to practise the finger-action on the violin-strings, first individually with each finger, and then with the various finger-combinations, But this practice is not to be "fingering" in the ordinary musical sense of the term. It is to be a finger-practice repeated and continued until he is satisfied that its seven features are all working harmoniously. In other words, the finger must be posed on the string, but the mind must be rivetted on the combined action represented in the table A to G. The object is not merely to stop the string, but to achieve a finger-action that complies with all the conditions.

The easiest, and therefore best, finger to begin with is the third, using the A-string. Take up the violin and make the experiment, which will be, in effect, only a transference of Exercise 10 from the right-hand to the instrument itself. At first, confine yourself to this one finger and this one string, concentrating your attention on the complete action (A to G) which you are endeavouring to carry out.

Then lay the violin down. Pick it up again, and repeat the experiment, say, a dozen times.

Then do precisely the same thing with the second finger; then with the fourth; and finally with the first.

Next, transfer the whole operation to the other strings in turn, going first to the D-string, then to the G-string, and last to the E-string.

Then pass on to finger-combinations, using the old list which was given on page 28, and adding thereto such combinations as:

0 1
0 2
0 3
0 4
4 1

As soon as some progress is made in the application of these exercises, the student may begin to play the scales *very slowly* and with his attention rivetted on the training of his hand. Afterwards he can increase the speed of the scales, stopping unpremeditatedly on some note, and immediately applying the vibrato. There is no surer test than this. If a ringing vibrato is not produced at once with every feeling of ease and security, there is something wrong with the running-technique.

In crossing the strings the hand is moved freely round the neck, so as to present the finger properly curved to each string in turn. The essentials here are to observe that the whole left-arm swings freely from the shoulder, and that the thumb remains passive.

The student is recommended to play the scales, not according to any system of relative keys, but in their finger-board order—G, A-flat, A-natural, B-flat, C, and so on. That is the right way to learn the finger-board and the right way to cultivate the left-hand technique.

After he has gained some experience in scale-playing, he will naturally go on to study-practice and to the playing of musical works. But he must by no means forget the advantages to be derived from improvisation, of course within the limits of the first position. On this point, however, we shall say something more in a later chapter.

CHAPTER IV

THE RIGHT-HAND: THEORY

OUR theoretical chapter on the left-hand was divided into two parts—a first, which dealt with the wrong ways of doing things; and a second, which put forward the right way. We propose to follow the same arrangement in this theoretical chapter on the right-hand.

The student is, no doubt, aware that inside his violin there is a sound-post; and that that sound-post is carefully fitted to resist the downward pressure on the belly of the violin caused by the tension of the strings.

The amount of this pressure, again, is determined by the height of the bridge, which is cut to give the greatest possible resonance to the back and belly. With too low a bridge there is too little pressure, and consequently too much resonance of the upper and lower plates. The result is a big hollow tone. With too high a bridge there is too much pressure, and consequently a lack of free vibration on the part of the plates. The result is a small hard tone.

The function of the bow is to set the strings in vibration by means of friction. And this vibration is conveyed through the bridge and sound-post, and so communicated to the air in the body of the instrument. The violin is, in fact, a hollow resonating box; and the sound waves that come direct to the ear from its four strings are only a small part of its total effect.[1] The sound-waves, however, owe their length, and therefore their carrying-power, to the speed of the bow.

The student's attention must here be drawn to two words which are, so to speak, the two opposing factions, the Montagues and the Capulets, in the art of tone-production, the words "pressure" and "contact." For the main business of this chapter is to show him: (1) that a good tone is impossible when pressure is improperly exerted with the bow; and (2) that it is only possible when the contact between hair and strings is properly adjusted.

Let us look into this difference a little more closely.

[1] For greater detail on this point, see page 304 of *Orchestration* by Cecil Forsyth (*Macmillan*).

The bow is an elastic wand strung with horsehair, which itself has a certain elasticity. It can be manipulated in two ways. Either the stick or the hair can be made to bounce. And when one of the two bounces, the other will remain inelastic.

The fingers hold the bow by the stick, which, we must remember, is nearly an inch above the playing-medium (the hair). The hand therefore travels in a plane that is parallel to the plane of the horsehair, but above it.

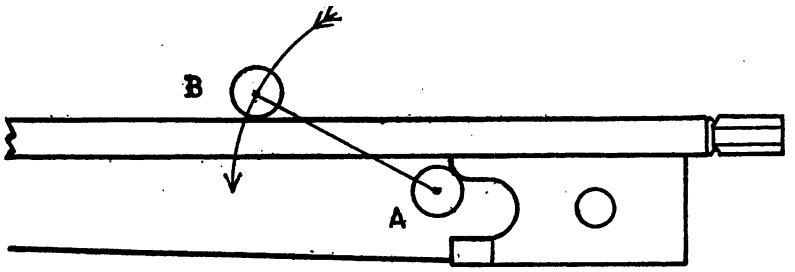


Fig. 12

The importance of this fact lies in its application. When once the bow is handled as though the holding-plane coincided with the hair-plane, a diagonal line of pressure is established from the hand to the string. This is shown in Fig. 12, where A is the thumb and B the forefinger. The downward pressure is, of course, exerted by the rotation of the forearm round the thumb. And the direction of this rotation is represented by the curved arrow

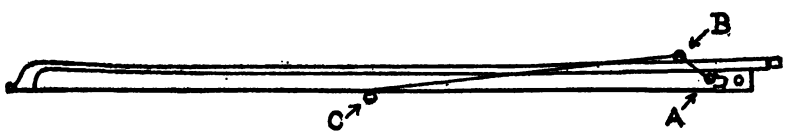


Fig. 13

In this way, then, a diagonal line of pressure is set up between the forefinger and the string. It may be represented, for instance, by the imaginary line connecting the two points B and C in Fig. 13. If it remained constant in its direction and force, it would have no evil results on the bow-stroke. But that, of course, is exactly what it does not remain. It is continually changing, both in its length and in its incidence to the string and to the stick—and consequently to the axis of the hand.

In other words, the direction in which the power is applied is always altering. The nearer we get to the nut (in the bow-stroke), the shorter becomes our imaginary line B C: and the further we get from the nut, the longer it becomes. Consequently, when it is at its shortest—that is to say, when we are playing at the nut—we may expect a good deal of roughness; and when it is at its longest—that is to say, when we are playing at the tip—we can not look for much force.[1]

Furthermore, the tone-quality that is produced by the exertion of this pressure is bad. The string has a tendency to *hop* under the hair. And it is able to do this because the pressure-plane does not coincide with the plane of movement.

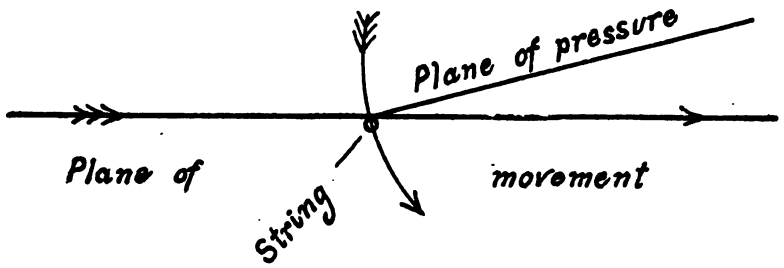


Fig. 14

Glance at Fig. 14. The little circle in the middle represents a segment of the string. If you hold the page up in front of you, the string may be supposed to run directly through this circle to your eye. The "plane of movement" gives you the line-of-travel of the horsehair. The "plane of pressure" pivots, as it were, on the string, continually altering its angle of incidence. So that you will have no difficulty in seeing why the string is inclined to respond with a *hopping* movement, such as may be observed in a loose string.

There are other reasons why this application of pressure is undesirable. It increases the tension of the string, and actually raises its pitch. It restricts the vibrating wave-length of the string, and therefore lessens the carrying-power of the tone. The material of the violin too must be considered. If the bridge and the sound-post have been fitted to give the instrument its best chances of resonance and easy speech, it stands to reason that all this added pressure must be a hin-

[1] For the mediæval attempts to construct a mechanically-bowed stringed instrument—that is to say, the organistrum, which was the ancestor of the hurdy-gurdy—see *Orchestration* (Forsyth) pp. 295–96. The point is of special interest here, because of the method by which the pressure was applied to the strings.

drance, not a help. Finally, the player has no real control over his apparatus. His mastery of the stick practically ends at the point where his forefinger lies. Beyond that, the string may, and will, become so bouncey that, with the slightest nervousness on his part, the even course of the horsehair is liable to be upset. Nor can he correct these irregularities by means of a small increase or decrease of this kind of pressure. For the main result of that will merely be that the string will be bent either more or less than before.

This method of bowing, then—the method of the pressing forefinger and the forearm rotating round the thumb—is unsatisfactory.

Not more satisfactory is the shoulder-method. This utilizes the shoulder as the point from which pressure is exerted. The idea is that, if the arm is held at all crooked, and the upper-arm rotated away from the body, the hand is bound to descend.

It is, however, a very elementary principle in mechanics that it is more difficult to deliver power through a long shaft than through a short one of the same diameter. With the long shaft there is always some loss from elasticity or bending. Errors are magnified, as the distance from their point of origin increases. And, in the arm, there is the added disadvantage of the joints that are interposed between the shoulder and the fingers.

Besides these mechanical principles, we must not forget that there are also human factors to be considered. The power has to travel a long way from shoulder to bow-stick. A great strain is thus placed on the muscles, and vocational cramp of the shoulder is the almost certain result.

This painful complaint sometimes comes from the long and unrelieved holding of a muscle contracted. More often it is due to the fact that the surfaces of the bones are not always perfectly smooth. They may have tiny projections which cause irritation, particularly round the joints. A projection of this sort may rub across the muscle or tendon-sheath, as the arm is moved to-and-fro, and may set up inflammation in either. When this inflammation is in the tendon-sheath, the wall weakens, stretches, and forms a pocket, which fills with the lubricating fluid of the tendon.[1]

But apart from these very serious physical drawbacks, there is a strong mechanical reason why pressure should not be applied from the

[1] Cramp sometimes attacks the hand when the tone is produced by pressure of the forefinger from the knuckle. It is also the inevitable consequence of raising the right collar-bone to "assist" the pressure.

shoulder. If the power is transmitted from the shoulder to the bow, the certain result is inflexibility of elbow, wrist, and fingers.

Pressure from the shoulder, then, is undesirable and dangerous. The shoulder-muscles, however, have an office to fulfil. But it is an office that is quite normal, and incapable of causing cramp, inflexibility, or fatigue. This function is what may be called the "backward-push" the function of seeing that, when pressure is exerted on or with the bow, *it takes effect in the desired direction.*

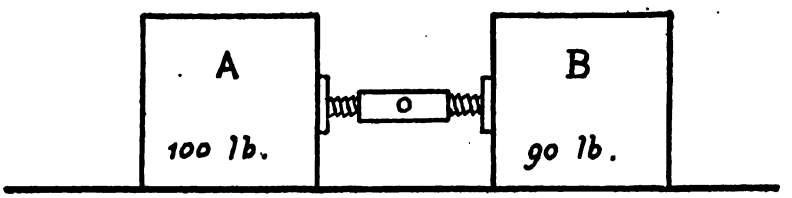


Fig. 15

Here some explanation is necessary. But, with the help of Fig. 15, the explanation can be made very short.

In Fig. 15 we have a jack and two blocks of unequal weight. Work the jack and, whichever block you may *hope* to move, it will be the 90 lb. block that you *will* move, because pressure always takes the easiest outlet. If A and B were equal in weight, they would be moved equally. Note this important point: The exercise of pressure in the most direct and most efficient manner demands that the body, from which the means of pressure operates, should have a power of resistance greater than the force applied. (This last long sentence is worth re-reading twice or thrice.)

So far for the wrong ways of using the bow. Let us now say, in one sentence, that the art of tone-production lies solely in adjusting the contact between the hair and the string, as the bow is drawn, and not in exerting pressure with it.

The correct method is to hold the bow as though it were part of the hand, and to exercise leverage from the wrist with the whole bow. This leverage must not be upon the bow as an instrument separate from the hand. But it must be applied so that the hair forms the desired degree of contact with the string, and so that the plane of pressure is kept parallel to the plane of movement.

This ideal method of tone-production is illustrated in Fig. 16, an illustration which is so simple that it may be left to the student's con-

sideration, with the one remark that the string is of course a segment, just like the string in Fig. 14.

The advantages of this system of bowing are many and obvious.

The string will not be bent out of its course. The hand-pressure will be transmitted, as it should be, in the form of a firmer or looser contact between hair and strings. These results are inevitable. For the pressure is not exerted radially onto the strings as in Fig. 13. The weight of the bow does not rest on the string. But the hair, passing

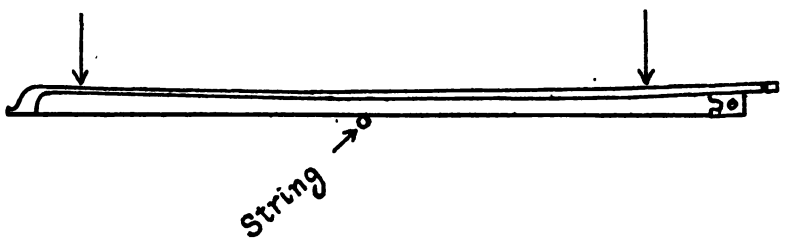


Fig. 16

to-and-fro along the plane of movement, just touches the string, while the sensitive hand regulates the degree of intimacy in the contact.

There will be no tendency of the string to jump under the hair, because the plane of pressure and the plane of movement run parallel to each other.

The amplitude of the string-vibrations is not restricted. In other words, the wave-lengths can be as big as they like, because the string is not being bent under the bow.

Finally, the stick is under complete control. It is rather a part of the hand than an exterior mechanism guided by the hand. And the consequence of that is that there will be no unintentional bouncing.

Our next step is to take up the bow. And when we do that, we must above all not regard it as something to be rested on the strings, and then to be *squashed* more or less. It is a light, strongly resilient, and delicately balanced instrument, to be wielded exquisitely by the hand, not merely to be dragged and shoved to-and-fro.

In holding it, the two outside fingers are the most important. They serve both to hold and to balance it, while the middle fingers support the hand by contact with the stick. The thumb is placed midway between the outside fingers.

The tip of the fourth finger and that part of the first finger which lies between the first and second joints are first placed on the stick.

Plate 14

Together with the thumb they hold the bow. This tilts the horizontal axis of the hand slightly downwards on the first finger side. The stick should not be passed under the second joint of the forefinger. For, if that is done, the hand, when called on for flexibility, will not be able to respond.

The two middle fingers are then placed lightly in contact with the stick. And, if all four fingers are properly placed, the distance on the stick between the contact-points of the first and fourth fingers should exactly equal the distance between the first and fourth knuckles. If that is so, the bending efficiency of the fingers will be at its highest.

The oft-repeated advice that the fingers should be kept close together probably originated with a violinist who had very thick fingers. In view of the many existing types of fingers and hands, the student will do well to disregard it. The proper way for him to find his position on the stick is to space the first and fourth fingers so that the thumb-tip falls midway between them, and so that their width on the stick equals the width of the knuckles.

Let us now take up the bow and hold it in this easy manner. We shall find no difficulty in passing it to-and-fro in the air. And if, while it is in motion, we lower it slightly onto the violin, a good deal of free tone will result from the merest contact of hair and string. All this is almost effortless on our part.

If we now try to make an ordinary bow-stroke, we shall find that we need exert no more effort than is necessary to draw the palm of the hand towards the inner side of the forearm. The fingers do nothing. They merely remain flexibly arched. For if closer contact between hair and strings is sought, it must be obtained by downward pressure from the wrist, not by any effort of the fingers. Indeed, it is essential that the fingers should make no more effort than is necessary to maintain them in their arched position. Any effort on their part will rob them of the flexibility and sensitiveness through which the degree of contact is gauged.

To understand this point fully, the student should turn to Plate 14, and place the fingers of the left-hand under the knuckles of the right-hand. If he will now press down the right-hand from the wrist, he will get a very good idea of what is meant.

He will also see the practical working of what was said above (page 35) with regard to the backward-push. For he will find that it becomes necessary to prevent the forearm from rising. As we have already pointed out, this requires very little effort, provided the arm

is not used to supply pressure. For the force is applied from a point very close to the bow. It therefore loses almost nothing in transmission. And the shoulder-muscles are called on for only a fraction of their resources to prevent this backfire. It may be added that some violinists accomplish this by bringing the weight of the arm into play. But this method is not to be commended. Its mechanical result is the resting of the weight of the bow on the string; its artistic result is a "fat," colourless tone-production.

As we have introduced the word "colour," we may mention the fact that, if a change in tone-colour is wished, it is to be effected by relaxing the guard mounted by the shoulder, and so allowing the wrist to rise in relation to the tip of the thumb.

The bow is thus presented to the string at a different angle; the elastic relationship between hair and stick is altered; and the essence of the contact between hair and string undergoes a subtle transformation.

If broader colour-changes are desired, they are to be obtained by adjusting the speed of the stroke to the quality of the contact. The greatest degree of intensity will, of course, come not from a high bow-speed, but from a low speed joined to a firm contact.

To cross the strings we merely raise or lower the hand in relation to the forearm, which re-adjusts itself after the new string has been reached.

If the tone is produced according to this method—that is to say, by pressure of the hand from the wrist, using only the forearm-muscles and such shoulder-control as is necessary to direct the pressure properly—the arm will remain supple, and will always assume a position which is natural, untiring, and free from awkwardness.

There is really no necessity to teach or to study any arm-position. Consciousness centres in the hand. The arm hangs between wrist and shoulder. It is neither pushed up nor held down; but, with an easy natural mobility, adjusts itself to every change in the position of the hand.

The only question now to be considered is the question of changing the bow at the point and at the heel. Nothing has caused more misunderstanding, or been the subject of more misinformation.

We have already pointed out that the horizontal axis of the hand tilts slightly downwards towards the first finger. Some hands are so large and wide that this tilt is hardly noticeable. The late Dr. Joseph Joachim had such a hand. And it was therefore taken for granted that what he called "a sideways movement of the hand" in changing the bow, was that and nothing else.

Plates 15 and 16

Now, it is entirely unnatural to move the hand sideways in the plane of the long axis of the wrist. It *can* be done—but only under a very great strain. For the wrist is not normally flexible over a sideways arc of any great length.

But if the tilt of the hand is taken into consideration, the matter becomes quite simple. For the hand, while moving ever so little sideways, is also raised or lowered (according as the movement is towards or away from the body), and then flexibly restored to its old position. It was this subtle accommodating action of the hand which escaped the observation of many of Joachim's pupils, though the master himself always made it.

Of course if the hand has no tilt, as in Plates 15 and 16, the raising of the knuckles can have only a perpendicular effect. But when the hand is tilted, as in Plates 17 and 18, the raising of the hand moves the knuckles to the left, and its lowering moves them to the right.

To make this movement successfully, it must be combined with a slight flexion of the fingers and the thumb, so as to keep the bow in its correct alignment with the bridge. At the same time the forearm rises or drops in contrary motion to that of the knuckles. In this way the bow is only affected by the sideways motion of the knuckles. It may be added that, for anatomical reasons and because of the difficulty of balancing the bow when the arm is raised, the movement has to be greater at the heel than at the point.

Before ending this chapter, a few words may be spared for a subject that has a historical as well as an artistic interest. Joseph Joachim's name has just been mentioned. And, as the principles enunciated in this chapter are largely based on his playing, and as "the Joachim bowing" has acquired a sort of international glamour, we shall conclude this chapter by dispelling some of the clouds which have gathered round that illustrious subject.

It is probable that in their essentials all the schools of violin-bowing are much the same. The various methods, as represented by the great players, differ from one another chiefly in externals—that is to say, in details of appearance. The theoretical method which has just been outlined is put forward, not through ignorance of other schools, but because it gives greater scope than any other method for flexible alterations in tone-colour, with greater ease and rapidity of change from one kind of bowing to another.

Joachim's pedigree as a violinist has often been printed. It is of the most distinguished. Yet he himself made no claim to the founda-

tion or even to the continuation of a school. His extraordinary control of expression by means of the bow always remained something of a mystery to him.

In fact, those who surrounded him were responsible for what became known as "the Joachim bowing." And nothing has been so much misunderstood, caricatured, and maligned as this bowing.

The object of his followers was simply to imitate the pose and appearance of his big wide hand. And, as Joachim himself never got much further in his explanation of his own technique than "flexibility of the wrist," the most outrageous exercises were invented by his disciples.

Things even went so far that pupils were led by their instructors to hang chairs on their forearms just above the wrist, while practising sideways movements of the hand that were an outrage and an abomination to nature.

Those who succeeded in imitating somewhat the appearance of Joachim's right-hand, and who could swing their own right-hands sideways over a wide arc were said "to have the Joachim bowing." Their playing might sound as scrawny as a midnight concert of cats. But even under these aural disabilities, they were upheld by the mystical belief that they "had the Joachim bowing." It was a sort of conviction of inward salvation, whose outward futility did not forbid them to hope that in time accomplishment might follow on appearance.

Not all succeeded—even to the point of appearance. But those who succumbed, succumbed as martyrs. As a rule their martyrdom was spoken of as an honourable achievement, entitling them to rank and precedence only just below that of the noble army of violin-saints. They also served, in a way; but, of course, without doing much active playing. For the melancholy truth must be told that, as signs of their martyrdom, they usually bore large wens on their wrists, or suffered the agonies of vocational cramp.

Is it necessary to add that, in encouraging these eccentricities and perversions, that great artist and noble-spirited man, Joseph Joachim, took no part whatever?

CHAPTER V

THE RIGHT-HAND: PRACTICE

BEFORE attacking the practical side of his right-hand technique, the student must undergo a course of muscular training, just as he did for his left-hand. With these exercises we shall begin the chapter, and then go on to the practical transference of the right-hand technique to the violin-bow. After that, we shall deal in succession with the subject of the hand-position, and with the two most important topics of the bow-stroke and the change of bow; closing the chapter with a few pages on expression, the method of crossing the strings, and attack.

The object of the exercises is the same in this chapter as in Chapter III.—muscular control. The scheme will therefore be almost identical; but a special thumb-exercise (No. 9) has been introduced for reasons that will be given later.

EXERCISES 1, 2, 3, 4, 5, 6

These are the same as Exercises 1–6 already printed in Chapter III. It goes without saying that the words "the arm," "the hand," and so on, are now to be understood as referring to the right-side. All six exercises should be re-studied with the closest attention; and the greatest care should be taken not to raise the collar-bone.

EXERCISE 7

Raise the arm slowly, first at the side and then in front, just as far as is possible without raising the collar-bone.

This is a special exercise intended to prevent the raising of the collar-bone. With a little practice the shoulder-joint becomes loosened; and the muscles round the shoulder are stretched, so that the arm can be raised with ease almost to the perpendicular.

EXERCISE 8

This exercise has already been described in Chapter IV., page 37, and its performance has been shown in Plate 14. It should be repeated very slowly ten or fifteen times; and the utmost care should be taken that the fingers of the right-hand remain entirely relaxed during the downward pressure from the wrist.

EXERCISE 9

Place the left-thumb against the first phalange of the right-thumb. Then, with the first two fingers of the left-hand, bring the second phalange of the thumb over, as far as the stiffness of the joint will allow, taking care not to press so hard as to cause injury.

This exercise is specially designed as a training for the thumb in those movements that accompany the change of bow from up to down, and *vice versa*. It is a necessary exercise because most players allow the second joint of the thumb to become stiff from disuse. Plate 19 shows the thumb straightened: Plate 20 shows it bent. Notice particularly that, when it is thus properly bent (Plate 20), it is actually arched, and that this arching is due to the fact that all three joints are equally moved. Compare this carefully with the imperfect bending shown in Plate 21, where only the first joint is moved. This important exercise (No. 9) should be performed ten or twelve times on end, and the performance should be repeated at intervals during the day. After a while, an attempt should be made to move the second phalange without the assistance of the left-hand. The "limit-positions" of this exercise will then be those shown in Plates 19 and 22.

EXERCISE 10

Is not an exercise, but a medical prescription. The application of the wet-sponge of an ordinary therapeutic battery round the joint will often help it to gain flexibility.

When the positions shown in Plates 19 and 20 can be assumed with more or less ease, the exercise should be vitalized and made practical by transferring it to the violin-bow, held perpendicularly. Plates 23 and 24 show us vividly what this transference amounts to. But the whole process needs careful analysis.

Starting, then, as in Plate 23, the hand is tilted slightly upon the

Plate 19

Plate 20

bow towards the forefinger, and the back of the hand is then slowly brought nearer to the forearm. This latter movement is accompanied by a certain sideways movement from the wrist—whatever movement is possible and convenient to make, in fact. While the hand is moving, the fingers and the thumb gradually bend, until they are in the position shown in Plate 24. The bow, be it said, is now three or four inches higher from the ground than it was at the beginning of the movement. The fourth finger, in bending, must bring the heel of the bow under the hand, and must not give at the knuckle. The object of this is, of course, to keep the bow perpendicular. Plate 25 shows us this fourth finger action correctly performed, and the bow upright. Plate 26 shows us the incorrect fourth finger action, with the slanting bow as its result. From this point the hand moves back to its original position; and while this movement is in progress, any tendency to jerkiness must be corrected. Pains also must be taken to confine the whole movement to the hand. The forearm must be kept immobile, and the fingers completely flexible and unstrained.

Before dealing with the somewhat delicate matter of the bow-stroke, we shall try to answer a question which has probably already risen in the student's mind as to the best and most practical hand-position for the stroke. This question can be easily disposed of in three paragraphs.

1. The thumb and fingers must be just comfortably curved. Greater curvature and straighter fingers are only needed for the change of bow.

2. While the hand tilts forward towards the forefinger, the body of the hand (from the knuckles to the wrist) is held exactly at right angles to the stick. This is so *at all times*, except at the moment when the bow is changed. The weight of the arm is not allowed to drag the wrist downwards as the heel is approached; neither is the forefinger permitted to slide further onto the stick as the point is approached.

3. There is, by this time, no need to repeat the injunction that the fingers must not be allowed to participate in the pressure exerted by the hand from the wrist. Nevertheless, it is through the fingers that the pressure is transmitted. The student must therefore be warned of the danger of allowing the hand's pressure to break down the arch of the fingers, more particularly that of the forefinger. The correct position, with the arch unbroken, is shown in Plate 27. The incorrect position, with the broken arch, is shown in Plate 28.

Now that we have dealt with this question of hand-position, we can turn our attention to the bow-stroke.

As in the left-hand technique, it is best to begin this study on the A-string. And a mirror may be recommended as a candid friend. With its help the player can watch his hand and note his daily progress. He should stand sideways to it, so that only the top of the bridge meets his eye. In this way he will be able to tell whether the bow is being drawn straight across the strings, and also to watch the movements of his hand during a change of bow.

However, the mirror should not be turned into a fetish. It has no *magical* virtue. And as its use takes the attention off the playing, it should be employed as little as possible. Bow and hand must eventually be judged by musical results. And, when the fine tone comes, the appearance of the hand will be quite satisfactory.

A young player's first bow-stroke is generally as daring an adventure as a young swimmer's first dive into deep water. There is hesitation and embarrassment, both of which affect the bow-stroke. A good deal of the embarrassment is caused merely by inflexibility of the shoulder. The point for the beginner to keep steadily in mind is that "consciousness centres in the hand" (page 38). In other words, he must always think of his hand as the master, controlling the bow. When the hand descends to place the bow in the playing position, the arm must give way before it—must, indeed, accommodate itself, through its various joints, to whatever movements the hand is pleased to make.

This "counsel of perfection" is, of course, very easy to put on paper. Its execution is a harder matter. And the best way to set about it is to undertake a sort of bow-drill, or violin-salute.

Hold the violin in position and the bow in the right-hand. Drop the right-hand at the side; and then, with the arm straight, move it outwards and away from the body, till it is over the head.

From this position lower it, guiding the bow until it touches the string at a point previously decided on. The bow throughout its length must accompany the hand in its descent, and must not be allowed to move radially towards the string from the hand as a centre. When it engages the string, there must be no stuttering.

When first practising this bow-drill, it will be wise to keep within the limits of the point and the middle. Later on it can be performed with the lower half of the bow.[1]

[1] By "middle" the student must always understand that point of the bow which touches the string when the forearm is parallel to the ground, not that point which is found by dividing the bow equally into two parts.

Plate 21

Plate 22

A very little experimenting with the tilt of the bow will teach the student the best angle at which it should be placed on the string.

The stick should be turned away from the player until, with the lightest possible contact, only a single hair touches the string. To reach this position the bow does not have to be turned far; and it is a position which should not be passed. The power of the stick is, at this point, still over the hair. And, as the contact is intensified, the hair touches the string throughout as much of its width as is desired.

If the bow is held flatter, only by turning it over can the edge of the hair be presented to the string. And if it is turned to form a more acute angle with the string, a new and false elastic relation between hair and string is established; so that the effort to make firm contact brings the stick into contact with the string.

It is quite unnecessary to turn the bow flat on approaching the point. That is only done by those who rely for their bowing on shoulder-action.

In practising the bow-stroke it is best to start from the middle.

Place the bow in position and try to sense with the fingers its very slight contact with the string. Then go on to intensify the contact by pressing down the whole bow with the hand from the wrist.

Take care all the time that the thumb does not give way, and so vitiate the pressure from above.

In this position, with fingers and thumb comfortably curved, keep your attention rivetted on the pressure which you are exercising by your hand. See also that the fingers act only to transmit the pressure, not to augment it. And try, through them, to sense the degree of contact that hair and string are making.

Hold this pressure for several seconds. And then, by the experiment of trying to relax the shoulder, ascertain whether you have unconsciously been allowing it to take part in the action.

Then gradually relax the pressure.

Repeat this about a dozen times. After which, when the pressure has been re-applied, draw the bow slowly towards the point.

Once the bow is in motion, your fingers may try to seize command, and so will blur all the impressions that you are seeking to perpetuate. Only the greatest watchfulness on your part will prevent this, and keep the hand in control. Remember that the sole function of the fingers is to transmit and to record.

When your hand has now drawn the bow to the tip, and before the pressure is relaxed, you should again make sure that the shoulder has

been properly relaxed, and has permitted the arm to follow the hand without interference.

The bow is now at the tip. And at this point you should repeat the experiments in pressure which you have just made at the middle of the bow. Press and relax five or six times; taking care, as usual, that the pressure is a pressure of the hand from the wrist.

Then move the bow upwards with the hand, until the forearm is parallel to the floor.

Here again, before changing the action of the hand, you must examine your arm carefully. For there is more danger of shoulder-interference during the up-bow than during the down. Repeat this exercise, then, until you are convinced that your hand is acting without any intervention either from the arm or from the fingers.

After you have assured yourself on this question, you may move the bow rapidly between the middle and the point some twenty or thirty times.

Be sure that if the shoulder or the elbow then feels tired or cramped you have been allowing the shoulder to exert pressure in an effort to "help" the hand. Or it may be that the impulse to move the bow is only partly centred in the hand. The forearm may be participating. And the result will be a subconscious confusion as to the exact moment when the upward movement changes to the downward, and *vice versa.*

After the above exercises have been pretty well mastered as between the middle of the bow and the point, they should all be repeated from the middle to the heel.

When the two halves of the bow can be used with some facility, it is high time to begin drawing the bow from end to end.

While doing this, it is an excellent plan to stop suddenly and examine the shoulder. If the bow can be drawn from end to end with the greatest swiftness and lightness, it means that the arm is absolutely free. The stop, when it is made, should be a long one; and the bow should remain on the string, while the player concentrates upon the next stroke. If there is the least stuttering during the stroke, it may be taken for granted that the arm is not accommodating itself to the movements of the hand; but is participating in directing the movements of the bow.

The next difficulty to be faced is the change of bow. Here again we shall be well-advised to begin the practice of the change at the middle of the bow.

First place the bow on the string, with the hand at a right angle to

Plate 23

Plate 24

the stick. From this position we can make either the up or the down change.

To make the change as though finishing an up-stroke.

Raise the hand at the knuckles, accompanying the movement by the bending action of the fingers described on page 43. But at the same time lower the wrist, and move it towards the stick to make compensation and to keep the bow moving in the same planes. (This compensation is necessary because we do not wish the action of the fingers to move the bow out of its course either horizontally or perpendicularly. The former would be caused by the shortening of the distance between wrist and stick: the latter by the raising of the knuckles.)

Next, reverse the whole process, and bring the bow back to the starting point.

These movements are all very slight. Their object is merely to provide an elastic change of direction. It is a good plan to make the change, described above, first of all as shown in Plates 23 and 24, that is to say, without any compensatory movements. The need of these will thereupon become so urgent that their purpose and nature will be evident to the player.

To make the changes as though finishing a down-stroke.

Lower the knuckles slightly, as the fingers and the thumb are straightened. At the same time raise the wrist, and move it towards the stick.

Then reverse the whole process.

Note that the bending movements of the fingers and the thumb have nothing whatever to do with tone-production. Their only object is to help in guiding the bow and to prevent stiffness and jars when changing stroke.

The change at the point is practised as a continuation of the downstroke, in the manner just described.

The change at the heel is much more difficult than any other. This is but natural. For the hand is then in a position in relation to the forearm which makes it difficult for the fourth finger to execute its proper function. Also it follows that, as the weight of the whole arm is then lifted, the hand-movement necessary to relieve the arm is longer.[1]

[1] It is often said that bowing at the heel is more difficult than bowing at the point because, when the bow is not at the heel, its weight is on the opposite side of the string from the hand. This can only mean one thing: that the bow is being leaned on the string. If the player holds the bow and supports its weight in his hand, it can make no difference whether the hair is touched to the string at the point or at the heel, beyond the added effort of lifting the arm for the latter.

Owing to the length of this movement at the heel, it takes a relatively longer time to execute there than at any other point. The idea is, of course, to move the bow at the same speed during the change as during the stroke proper.

If the player experimentally sets the bow in position about four inches from the heel, and then raises the knuckles while bending the fingers and the thumb, he will find, not only that the hair is high above the string, but that it has moved considerably towards the tail-piece. Hence the necessity for these compensating movements of which we have already made mention.[1]

They are doubly difficult here. They are greater in extent and duration; the function of the forefinger is specially trying; and the business of lowering the wrist, as the knuckles rise, has to be undertaken with much caution. Otherwise, at the slightest sign of relief, the muscles holding the arm aloft will act too precipitately and cause the bow to grind into the string.

The sensitiveness of the fingers must direct the flexibly controlled and balanced wrist, so that the desired contact is maintained throughout the operation.

It can not be too clearly recognized that, though the ear has a great deal to do with fine tone-production, its function is purely critical—not operative.

Let us add one last word with regard to the change of bow. Great patience is necessary in practising it. And it is only by perfect co-ordination of the vital parts of the whole operation that full control and beauty of tone can be assured.

The welding of the changes of bow into the stroke is best accomplished in three stages, the directions for which apply equally to the two halves of the bow and to the whole bow.

In the first stage, the player makes the stroke, taking care that the hand is always at right angles to the stick. Then, after a halt, he performs the change, again halting before the stroke in the opposite direction.

Fig. 17 shows this graphically. The two horizontal lines are the up-bow and the down-bow strokes. The arrow-heads give the direc-

[1] Their logic will probably seem more urgent now that we are dealing with the heel. In the middle, the player may easily delude himself into the belief that no part of the weight of the bow is resting on the strings. But that delusion can not be so readily indulged in at the heel, when the hand is compelled to have hold of the bow in order to lift it from the string.

Plate 25

tion. The little breaks in the lines represent the halts. And the sloping lines at the left and the right of the diagram suggest the changes at heel or point (or elsewhere).

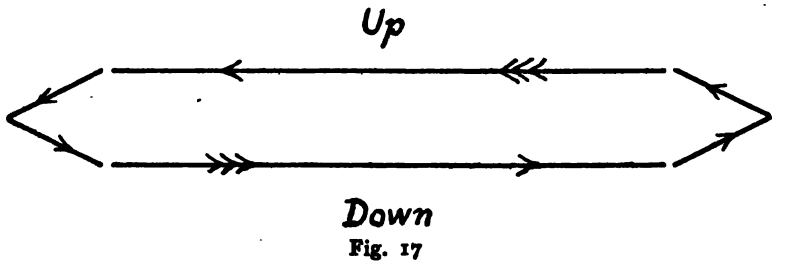


Fig. 17

In the second stage, the preliminary halt before the change is still made for purposes of mental concentration. But the halt after the stroke is dropped. See Fig. 18 for its diagrammatic enforcement.

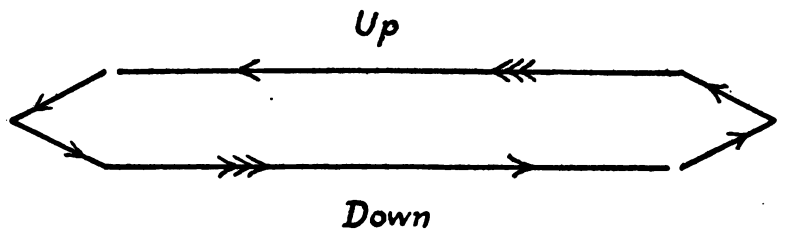


Fig. 18

In the third stage—of which it is hardly necessary to offer an illustration—both halts are dropped.

Crescendoes and diminuendoes should be practised with every precaution that change of tone-power is not being produced by finger-effort. About a dozen of these dynamic variations are worth serious and persistent practice. Fig. 19 gives them all. And they may be left, with the observation that they are, of course, to be read from left to right, see page 98.

The crossing of the strings is not a very difficult matter. It is as well to recognize, however, that there are five sorts of passage possible under this heading.

1. Passage from one string to another in the course of the stroke.
2. Passage from one string to another at the time when the stroke is changed.
3. Passage from one string to another, and then back to the first string in the course of the stroke.

4. Passage from one string to another in the course of the stroke, and then back to the first string at the time when the stroke is changed.

5. Passage across three or four strings, as in arpeggio-playing.

The practice in changing strings is to raise or depress the knuckles sufficiently to transfer the bow, the wrist being then brought up or down to the normal position.

In the exercises that involve only two strings it is best to begin the practice with only such a movement of the bow as is produced by the action of changing the bow. It is easier so to control the necessary positional changes of the wrist than it would be if the wrist were in longitudinal motion. Of course, in actual playing, the hand will direct the use of as much bow as is needed to carry out the musical intention.

In passing from one string to another, and then back again, the wrist retains its normal position: the knuckles alone rise and fall.

In arpeggio-playing the hand does not operate in a series of steps from string to string, but the knuckles rise and fall about as much as they do in going from one string to another. The movement is even, and, when spread over three or four strings, comparatively slow. The difference in elevation is made by the arm, which rises and sinks under the direction of the hand.

There are two kinds of attack, the selection of which depends on the sort of expression that is required by the music.

In the first, the bow is placed in contact with the string, and the stroke is begun from that position.

In the second, the knuckles are raised so that the bow is off the string, while the fingers and the thumb are bent. At starting, the knuckles are quickly lowered, and the thumb and fingers are straightened until the hair is in contact with the string. Then the stroke proper begins.

Plate 27

Plate 28

CHAPTER VI

GENERAL POSITION. CARE OF THE VIOLIN

EVERY soloist has to consider carefully the question of his general position when playing. He has to do this for his own artistic welfare, and for the sake of the hundreds of eyes that are sure to be fixed on him during his performance. We need not, then, think any the worse of him, if we find him giving some attention to this subject.

Let it be confessed that a violinist, seen from the back of a concert-hall, is not a beautiful object. All the exquisite muscular movements that make his art what it is are there quite invisible. The ear alone is enchanted. The eye is continually faced with the struggling black silhouette on the platform. Sometimes it stands grimly glued to the floor, as if foredoomed to instant destruction should it move a single pace to left or right. Sometimes it is an inverted "V" that sways to-and-fro, battling with the music as a young pine-tree battles with the gale. But always it is a black unsubstantial silhouette, that holds a tiny toy in its hands, and is capped with a vague oval of pinkey-white.

The truth of these facts—by no means new, but little dwelt-on by press-agents and concert-managers—can be tested by a few visits to any concert-hall in the world.

The soloist, then, has to face some disabilities in trying to appear the romantic fellow that, of course, he always is. But, luckily for music, there is the other and more sincere side of his art. And it is on that side that we may approach him with confidence.

There is really only one object in adopting a "position"; and that object is to secure the greatest bodily freedom and comfort in playing. Most of the "rules" that have been laid down on this matter are as one-sided as some of the players that are produced by them.

For example, there are very few students who have not been told, at some time or other, that the whole weight of the body should be thrown on the left-leg. This solemn pronouncement is generally accompanied by the explanation that "by doing so, the right-side is freed." But this provokes the still more solemn, and quite unanswerable, question, "Then, what happens to the left-side?"

Students have been told, with great seriousness, that the jaw should always be placed on the violin, and not the chin. And this maxim of prudence has been enforced by reference to a well-known engraving of Joseph Joachim in his later years. But there are many portraits of Joachim in existence which show him with his chin clearly placed on his instrument. Also, it is a well-known fact that he saw very badly; and, as he grew old, hardly at all with his right eye.

These are samples of the "rules" that are carefully barnacled onto the beginner's little skiff by the pedant. But the only rule that is worth a snap is the rule to know your principles, and then to suit yourself. What is good for you in ordinary life is good for you as a violinist. Don't raise either of your shoulders. Don't push your stomach forward. Don't rest the weight of the thorax on the pelvis. Don't prearrange one pose, as if you had a taste for cataleptic fits. Be easy, and you will be graceful.

In particular, remember that, if you over-tire one part of your body, you will soon feel its effects elsewhere, in loss of attention and muscular control. To put it more precisely: *localized* bodily fatigue is quickly converted into *general* bodily fatigue.

To these purely physical points one small point of psychology may be added. A big audience, throbbing and glowing with the ecstasy of a G-string melody (let us say), is inclined to regard musical emotion as a purely personal matter. The violinist, from their point of view, is telling them all about his joys and sorrows, his present and past love-affairs, his worldly and celestial aspirations.

But a big audience is not therefore a discerning audience. Indeed, it is quite certain that its discernment decreases in inverse ratio with its size. After the 5000-limit has been passed, it becomes almost an animal—Plato's "big brute," in fact, the brute that may be teachable, but is at present untaught.

Let the violinist, then, face this fact fairly and squarely: that, whatever influence life itself has on an artist, a musical composition is not a record of a composer's individual experiences, and therefore assuredly not that of a player's.

The sincere artist should not antagonize his audience either by holding himself aloof, or by acting every passage that he plays. And he may be quite sure that, the more he divests his art of all suggestion of personal reminiscence in its emotional expression, the more profoundly will he touch the hearts of those whose hearts are worth touching.

To descend from these altitudes to the less rarified atmosphere of the practice-room, it may be mentioned that, if the student is playing seated, he should use a chair whose height will not bring his right-leg into collision with his bow. He should sit well on the seat, not eagerly at its extreme edge. His feet should neither be turned under the legs of the chair, nor twisted round them. There should be no tenseness. But the whole thorax should be gently raised; and as much attention should be paid to proper breathing when seated as when standing.

Every violinist should also play the viola.

If he asks the reason of this strange advice, the answer is "for his own benefit." But will not his intonation be spoilt? No, it will be improved. He will be forced, by the difference in the note-spaces, into a much more accurate consciousness of his own finger-board.

To gain these advantages he need not, of course, play the viola *in public*. But if he plays it at home, it must not be with the sort of amiable condescension with which a crack trumpeter takes up the cornet. If he feels any snobbish inclination to begin by calling it "the more dignified instrument," he should pause. It is tonally the equal of the violin, historically its superior. And if it is useless for flashy trick-work, it can offer, as a humble substitute, much musical loveliness in the twin-realms of chamber-music and the orchestra.

Another caution. There is no need to sprawl and wallow in one's chair, because one is playing the viola. Violists do not. As a joke, wallowing is poor: as art, disrespectful. Nor should a violin-bow be used. The viola-bow is longer, heavier, and more powerful. Without it, a fine viola-tone is an impossibility.

Furthermore, as many violinists have a horror, not only of the viola, but of any violin except their own, one may be allowed to quote for their benefit a saying of Wieniawski: *Ne jouez pas* un *violon; jouez* le *violon.*

It is far from easy to give any general rules that will help the young player in adopting a good violin-position. Such rules are apt to read as if they were snipped out of a copy-book. Thus, one may say that any kind of affectation should be sternly discouraged. On the other hand, the opposite sins of stiffness and slovenliness are equally to be avoided.

But the ideal is not to look like a violin-playing prig. It is to get a sort of easy freedom and confidence, which may perhaps best be expressed by the one word "naturalness."

This naturalness should appear in everything you do. If you feel

like putting your chin on the chin-rest, do so. The next moment you may feel like putting the jaw there. And presently you may wish to leave the violin entirely free. Nobody will issue a summons against you as a criminal for any of these acts. And you yourself know by now that the important thing is to keep the shoulder loose at all times.

Do not hold the violin too far either to the side or in front. A middle-position is more comfortable and better-looking. If you point your instrument earthwards, or skywards like an astronomer's telescope, you are only increasing your difficulties. For the bow is sure to work in the opposite direction, towards or away from the bridge.

Breathe freely and regularly. Keep the throat always relaxed and open. And if the length of your neck causes anxiety, place a small round pad on the collar-bone, where its ridge is evident through the absence of muscle-fastenings.

Do not stand with your eyes glued to those very vague and imperfect sound-symbols, commonly known as "the music." The practising of pure technique will compel you to stand stock-still. Otherwise, your mind would wander. But, between the bouts of technique, let your feet wander a little. Move about the room; take a look at the view from your windows; become less technical for the moment, and more human.

Abandon the printed page at the first possible opportunity. If you do, your memory will be benefited. You will not go stale by constant playing in the same room or into the same corner of one room. And, when you are away from the desk, you will get a much better idea of what your playing-position is, and of how your playing is likely to sound at a distance.

One of the greatest difficulties of all teachers is to get their pupils to listen to their own playing. A pupil will produce sounds that would horrify him if they came from another player—and will then turn calmly to his teacher for approbation and applause. It is obvious that he has heard nothing of his own playing. His mind has been completely absorbed by his *intention*. The *result* has been inaudible to him. This matter, so vitally important in teaching, is one that can only be mentioned here. Its daily enforcement by means of never-ending stoppages and comparisons must be left to those teachers who have the necessary patience and devotion.

The tuning of the violin can be done quietly and quickly. It rarely is. The point to notice is that heavy slow bowing actually changes the pitch of the strings. A light moderately quick bow-stroke is all that

is necessary. And when once the fifths are correct, further tuning is a symptom of idiocy. The flight of easy harmonics, with which the tuning-rite is concluded, should *always* be omitted.

The violin, like the human body, needs keeping clean. Indeed, it needs it more than the human body. For it has no automatic apparatus, by means of which it can throw off the finely divided particles of rosin-dust. And free-vibration is its very life and breath.

The possession of a beautiful silk handkerchief, initialled in one corner, will not ensure this cleanliness. It may be—and often is—a symbol of love. But as a talisman against dirt it has little value.

Remove your pegs, then, at least every two weeks. Take them out, one by one, and smear them, first with soap, next with chalk, and finally with graphite. The graphite can easily be obtained from a lead-pencil.

See that your bridge leans slightly backwards. The tendency of the strings, and particularly of the E-string, is to draw it forward. This should be corrected daily.

After playing, clean the whole violin thoroughly. In doing this, do not overlook the neck. The strings too must be cleaned, not only above the finger-board, but in the bow-space. You need not fear that you will fray them if you rub them in only one direction. But every time this cleaning is omitted, a thicker crust of rosin will collect on them. This means robbing the gut of its peculiar lightness and elasticity, and so spoiling the tone.

To make certain that your strings are correct, take a piece of stout paper, and mark on it the distance between the nut and the bridge. Then fold the paper between the two marks, and transfer the new halfway mark to the finger-board. This will give you the exact spot where the octave should be. Next, stop the string at this mark with your nail. If the note is higher or lower than the true octave, discard the string and try another.

Keep a particularly wary eye on the bridge, when you are drawing up a new E-string. The bridge always tilts forward. Also, if there is much changing of E's, the top-string groove will quickly be worn too deep. The best way to obviate this is to make a special groove, outside the ordinary groove, for use when you are pulling the string up to pitch.

The finger-board, too, needs constant watching, both for grooves made by the contact of the strings, and for a possible straightening. When new, the finger-board is slightly hollowed from end to end to

prevent rattling near the stopping-place. Changes in climate often cause it to warp, and so to straighten. And the finger-board, thus straightened, has to be planed back to its proper curve. To test this point, stop the string near the nut with the nail, while the right-hand does the same at the end of the finger-board. The string should ring clear, when plucked.

Cheap repairs, like cheap strings, are an abomination. Yet the honest fiddle-doctor—who, of course, charges his price—is in a way a benefactor to the race of musicians. For, unlike the ordinary doctor of human bodies, he can keep the vital spark glowing for centuries in his patients. The number of such wizards in the whole world can probably be counted on the fingers of two hands. And if we were further to restrict the list to those whose honesty would compel them to pronounce the verdict "dead" on a violin that *is* dead, we fear that the fingers of one hand would be more than enough.

However, these honest wizards do exist. And, as we have testified to their existence, we may be forgiven for adding a few words of caution to the young violinist. Never buy an old instrument that is patched under the sound-post. No matter what you are told, you will be laying up trouble for yourself. The patch may indicate only weakness. On the other hand, it may be concealing an actual crack. Every change in the weather affects a violin thus patched. And from day to day you will never know whether it will be in playing-condition or hoarse, shrill, and scratchy.

If you can pay for Cremona or Brescia in good preservation, by all means pay for it, and live happily ever afterwards. But, whether you can or can not pay, it is far better for your temper and your musical health to play on a good modern violin that is intact, than to be at the mercy of a decrepit old bi-centenarian that is cracked and lined, toneless from age, and (for your purposes) a musical paralytic.

When you choose a bow, do not demand too much elasticity. It is generally found only at the cost of strength. Reject any bow that gives sideways.

The idea that a bow is of vast importance is nonsense. Any one that is strong and reasonably elastic is good enough to play with. The player is responsible for what comes out of the violin—not the bow.

Yet it is a common sight, at a violin dealer's, to see players trying dozens of bows before making up their minds to purchase one. Sometimes they swish them through the air, as if they were jockeys, and meant to use them for horse-racing. At other times they bounce them

on tables, apparently to see if the spiccato-mechanism inside them is working correctly.

On these occasions the bow-maker generally says very little, as he is anxious to sell his goods. What he thinks, of course, no one can tell. But, as he generally has a good head for mechanics, he probably reflects that he has done his part in *making* the bow, and that it is the business of the player's hand *to make it jump*.

CHAPTER VII

THE HIGHER POSITIONS. SHIFTING

THE theory of the left-hand technique for the first position was laid down in Chapter II. This theory holds good for all the other positions. In the higher positions, the outward appearance of the hand is changed; but from the first to the third position there is not even any outward change. The student may therefore practise in the second and third positions without any further addition to his first position technique.

It is generally taught that the base of the hand should rest against the body of the violin in the third position. And the lame explanation is usually given that, by so doing, the player "knows where he is" and "feels secure."

But let us see what this amounts to. An inexperienced Alpine climber finds himself on a ridge six-feet square, with a drop of a thousand feet on either side of him. He also "knows where he is." And, if he will only take the precaution of sitting down, will "feel secure." But he can't remain there for ever. His object, like the violinist's, is to get somewhere. And his troubles, again like the violinist's, are likely to begin when he starts climbing again.

There is, indeed, no reason at all why the base of the hand should ever touch the body of the violin. And there are at least six good reasons why it should not.

1. Touching the base of the hand to the violin lowers the knuckle out of the striking-plane.

2. It makes the proper arm-vibrato impossible. (This alone is enough to condemn it.)

3. It destroys the proper balance of the playing-finger, and also the relaxation of the rest of the hand. (This is inevitable, because the player immediately senses his hand, not as four separate fingers, but as a solid wall.)

4. It robs the thumb of its true function, because the violin is then supported on the base of the hand.

5. The difficulty of getting out of such a position to resume the technique in a lower position is great.

6. The violin does not need the base of the hand for its support. The thumb can quite well do the supporting.

Plate 29

Plate 30

Now, let us first state quite clearly that we have to use positions higher than the third: and that, in those positions, the body of the violin does prevent the hand from functioning in exactly its former position.

But this fact does not mean that we must discard the principles that we have already learned. They are certainly not vitiated by the physical fact that the body of the instrument juts out sideways from the neck. The knuckle must still be kept in the striking-plane: the thumb must continue to support the violin. But, for the higher positions, we must arrange the hand so that it passes round the body of the instrument.

Let us first take the positions, and then go into the matter of shifting from one to another.

There is a preliminary observation to be made here. Within the limits of each position there is one series of available notes. And the student is earnestly desired to make a study of what these notes are in all the positions, so that he may never be at a loss to know the fingering of any note in any position.

If this study is undertaken—and it can quite well be made away from the instrument—he will gain an instinctive appreciation of the location of all the notes that are across the strings, but in the same position. He will have, in fact, a sort of group-perception for each position.

As an example: he will instantly sense the fact that, after having played E-flat with the third finger on the G-string in the third position, the note D-flat on the E-string is played by the fourth finger very close to the place where the third finger would lie if it were moved straight over to the E-string.

A second example will bring home to him the importance of training the fingers to move straight across the finger-board, without getting too high or too low. Thus, if he plays the four notes E-flat, B-flat, F, C, on the four strings with one finger, it is essential that the tip of that finger should, in each case, be at exactly the same distance from the bridge.

We now have to investigate the method by which the knuckle is kept in the striking-plane while passing through the higher positions.

Plate 29 shows the hand posed for the first three positions.

Plate 30 shows the knuckle still in the striking-plane while the wrist has been drawn back from the knuckle to the body of the violin.

Plate 31 shows the wrist drawn back. But, as the action has pivoted round the finger-tip instead of round the knuckle, the latter is moved completely out of the striking-plane.

One of the bad consequences of this false position is that the finger-tips descend to the string nail-first. The result is so much discomfort and inconvenience, that the third joint is frequently straightened in order to *seat* the finger—an uncomfortable position that is shown in Plate 32.

The student may very profitably pose the left-elbow on a table; and, taking Plates 29 and 30 for his models, practise moving the left-wrist backwards and forwards, until the movement can readily be made from the knuckle, without disturbing the finger or moving the knuckle out of the striking-plane.

The hand mounts from position to position. And, after the third position has been passed, the thumb is drawn round the neck; until, in the very highest positions, that part of it which lies between the third joint and the extreme tip supports the instrument.

At present the student need go no further with the thumb-technique. But he should now experiment with the higher positions, bearing in mind the fact that, notwithstanding the changed position of thumb and wrist, the violin still rests on the thumb. Thus, there is complete freedom for its adjustment to the rest of the hand.

At this stage some experimenting must be made with the higher positions. This is necessary before we face the added complication of shifting smoothly from one position to another. But it must be remembered that a knowledge of the positions practically means for us a knowledge of the extent to which the wrist is drawn back and the thumb drawn under.

It is therefore best, now that the student is familiar with the first three positions, to begin—not with the fourth, in which the difference is very slight—but with a higher position, such as the seventh, the one in which the first finger rests upon the octave of the string. The difference in the wrist and thumb positions is here sufficiently great to be easily appreciated. And from this position the student may work down to the third and up to the highest.

The logical course for him is simply to play the notes in the seventh position, noting carefully on what part of the thumb the violin may be conveniently supported; how far back the wrist is projected, and whether the knuckle is in the striking-plane.

During the exercise the violin should be lowered several times, and

Plate 31

Plate 32

the correct position re-found; after which, the vibrato should be essayed. But if the theoretical principles which we have already laid down are faithfully carried out in practice, this exercise will be entirely successful. Its possible failure can only be due to one of the following causes:

1. There is play at the knuckle.
2. The knuckle has been lifted out of the striking-plane; so that the finger is insecure, and the nail comes into contact with the string.
3. The other fingers are not relaxed.
4. The thumb and finger are acting as pincers.
5. The violin is not resting on the thumb.
6. The hand, as a whole, is not independent of the thumb.
7. The wrist is flexible.

Of all these causes, No. 7 is the least likely to occur; because the thumb is inevitably projected backwards in the higher positions, and so there is very little tendency to swing from it.

The position of the thumb is governed by the size and shape of the individual hand. But approximately, in the seventh position it touches the thumb-side of the curve of the neck between the third joint and the tip.

The student should next essay the ninth position, in which the thumb is generally drawn a little further round the neck, so that the lowest part of the curve of the neck rests upon the thumb near the tip.

For the tenth position the thumb is swung still further round the neck. The thumb then supports it on the finger-side of the curve, and, from then on to the higher positions, retains that position.

In trying these two positions, note (as before) the extent to which the wrist is bent. Note also what is the exact position of the thumb that makes the finger-action most convenient and comfortable. And take care that the connection between thumb and first finger is not made rigid through the position of the wrist.

It may be mentioned here that the further the thumb is drawn round the neck in any one position, the further back will the wrist be pushed. And this, again, will increase the rigidity. At no time, therefore, should the thumb be drawn any further round the neck than is necessary to allow the wrist to clear the body of the instrument, and to assure a convenient placing of the fingers. The test of correctness is always the presence of security, ease, and a free expressive vibrato.

The student has now experimented with the seventh, the ninth,

and the tenth positions. Before attempting the lower positions, he should practise a slow glissando, beginning in the eleventh position with the fourth finger on the harmonic.

(There is little difference in the pose of the wrist between the third and fourth positions. Yet the difference is in many ways important. And, as a clear understanding of its importance must be gained, it is best to do so—not by an isolated fourth-position-study—but by studying the fourth position in relation to the positions on either side of it.)

In making the downward glissando, the descent must necessarily be slow in order to observe the changes of wrist and thumb as the lower positions are reached. After some little familiarity has been gained in the glissando, it is well to halt suddenly and essay the vibrato. Other halts may be made to test whether the violin really rests on the thumb. This is done by carefully lifting the finger from the string, when it at once becomes evident if the finger has shared with the thumb in supporting the instrument. Finally, the glissando should be occasionally interrupted in order to play a scale or a passage in one position or another. If this is done, it will at once be apparent whether the hand is posed comfortably or not.

So far the practice has probably been upon one string. It is now time to perform the glissando on the lower strings also. On these, the thumb and wrist positions are slightly exaggerated, of course. One has to reach over to them a little more. But the necessary changes are small, and one can make them easily if one is familiar with the procedure on the top-string.

We now come to the subject of shifting, undoubtedly one of the most important branches of violin-study.

Shifting is the transposition of the whole hand to a new position. And, naturally, part of the process is the posing of the thumb-support in the new position, so as to make the finger-action there easy and secure. Not only do ease, fluency, and correct intonation depend largely upon skill and accuracy in shifting; but shifts, judiciously used, are a decided factor in musical expression. The different kinds of shifts are as follows:

UPWARDS

1y. From a low to a higher finger.
2y. With the same finger.
3y. From a high to a lower finger.

DOWNWARDS

1z. From a high to a lower finger.
2z. With the same finger.
3z. From a low to a higher finger.

Any one of these kinds may be performed either rapidly and cleanly (so that no break is heard), or slightly slower (so that there is a suggestion of portamento). And the portamento will have a different sound, according as the shift is made from a low to a higher finger, or from a high to a lower finger.

Besides these six kinds of shift, there is another which, though it belongs to the second species, can be disposed of at once—the shift of a half-tone with the same finger and within the limits of one position. It is convenient to deal with this shift here, because it is the simplest of all, and involves no change of thumb-position.

As an example, let us take the shift from D to E-flat with the third finger on the A-string in the first position.

In making this shift, the finger, hand, and forearm are passed forwards together, leaving the thumb where it originally was. If the thumb really supports the violin, and if the hand is really free, there will be no difficulty in performing this action, which transfers the finger-tip from D to E-flat without removing the knuckle from the striking-plane.

It is, in other words, a movement, from the elbow, of the whole forearm and hand; and it depends for its success upon inflexibility of the wrist and knuckle, and independence as between the hand and the thumb.

The moment the arch of the finger is changed, or the finger is moved forward from the wrist, the technique is incorrect, for the two reasons that (1) the knuckle is no longer in the striking-plane, and (2) the finger-action for the rest of the passage is bound to be impaired.

If, after the E-flat has been reached, the rest of the passage is in the second position, the thumb is then moved slightly along the neck to the proper position of comfort. But if, after one or two notes, the passage shifts back to the first position, the thumb is not moved at all.

Shifting in the other direction from E-flat to D is performed similarly by the forearm and hand from the elbow. And one may add that this is the *universal* method in shifting with the same finger over half-tones.

The technique of shifting is broadly twofold:

1. Between the first and third positions.
2. Between the third and higher positions.

Each of these two stages embraces the technique of shifting upwards and downwards, and the technique is further subdivided to cover the six kinds of shifts already given.

First of all we shall deal with the three kinds of shifts between the first and third positions. These three kinds are, of course, selected from the list of six, given on page 63. And we need only remark that the technique is similar between the first and second and the second and third.

In shifting upwards, the movement is always made by carrying the thumb with the forearm. Care must be taken that the violin really rests upon the thumb throughout the shift.

In making the shift 2y the forearm and thumb are moved, until the finger-tip is carried to the point of true intonation.[1] But—let it be said again—the curve of the finger must not be changed, and the wrist must remain inflexible. Otherwise, the knuckle will leave the striking-plane.

In shift 3y, we can take for our example the notes D and E-flat. The problem is to move from the third finger on D to the second finger on E-flat.

The second finger is first placed lightly on the string close behind the third finger. The shift then proceeds exactly as in shift 2y. And as the tip of the third finger is about to reach E-flat, it is raised from the string, and the second finger immediately behind it is pressed down. The movement is continued until the second finger reaches E-flat.

On no account may the finger be raised during the shift. If it is so raised, the open string will, of course, be heard.

The shift 1y may be performed either by sliding with the finger which is already on the string and then changing to the new finger, or by changing to the new finger at the moment that the slide is begun.

In the first method, the hand and arm are moved forward until the

[1] The sense of movement must always be centred in the thumb, not in the finger.

low finger has been carried from the first position to its proper position in the third (or, perhaps, the second). The higher finger then stops the note desired.

Let us give an example on the A-string. If we are to shift from C in the first position (second finger) to F in the third position (third finger), the thumb, hand, and forearm are moved until the second finger reaches E. At that exact moment the third finger is placed on F, and the second finger is raised.

The other method of making the shift 1y is to place the tip of the third finger close to the tip of the second; and, as the shift is begun, to transfer the third in place of the second to the string. The shift is then continued with the third finger, until the latter arrives at F.

In shifting downwards from the third to the first position, the chief difference lies in the thumb-technique. So long as movement was towards the body, there was no difficulty in supporting the violin. But now, in moving the hand away from the body, the tendency to draw the violin from under the chin has to be counteracted by a backward movement of the thumb, preliminary to moving the hand.

It is scarcely convenient, when in the third position, to move the thumb so far back that it will be in its normal comfortable position when the hand reaches the first position. The thumb is therefore moved backwards only so far as is comfortable; and the movement is completed after the hand is in the first position.

The shift 2z is, except for the difference in thumb-technique, performed in the same manner as the shift in the upward direction; and the same precautions are taken against moving the knuckle from the striking-plane.

The shift 1z is performed by drawing the hand backwards until the high finger is in its normal position in the first position. It is then raised from the string, as the lower finger is pressed down. Thus, in shifting from F to C on the A-string, the third finger is carried downwards from F until it reaches D. At that exact moment it is raised and the second finger pressed down upon C.

In making the shift 3z, the low finger moves backwards with the higher finger placed against it just above the string. Then, at the exact moment that it is passing the note to which the shift is being made, it is drawn out of the way and raised. At the same moment the higher finger is pressed down to the finger-board.

This concludes our analysis of the whole shifting-technique, as between the first and third positions—a technique which is best

practised with frequent interruptions for the purpose of trying the vibrato.

In shifting between the third and higher positions, there are some differences of the thumb-technique to be added. Let us therefore describe the process of shifting between the third and sixth positions, as this shift is representative of all the longer shifts.

In shifting upwards, the thumb is first moved backwards, so that it is brought underneath the neck, which is then supported by the third phalange, instead of the padded second phalange. The wrist is thereby moved outwards and away from the violin, and then moves forward together with the arm and hand.

The extent to which the thumb must be moved backwards depends upon two factors: first, upon the structure of the individual hand; and second, upon what part of the thumb is found necessary for the support of the violin.

The further the thumb is carried backwards, the nearer to the tip will be its point of contact with the neck. It is here that the value of the preliminary work becomes evident. For it is precisely by this glissando- and position-study that the student gets an idea of the extent to which the thumb must be drawn round the neck.

In shifting downwards from the sixth to the third position, the movement of the arm and hand is begun before any change of thumb-position is made. But as the hand passes through the fifth position, the thumb allows the neck to slide downwards along it, until it once more rests on the fleshy pad of the second phalange.

There is a short shift between the third and fourth positions made for temporary occupation. Before this shift is begun, the thumb is moved, not backwards but forwards as far as is convenient and possible.

It remains now to explain how to shift from one of the first two to any one of the higher positions. The process is really very simple. As the arm and hand move forwards through the first three positions, the thumb is moved backwards, until that part of it which is correct for the ultimate position is in contact with the neck.

Shifting downwards from the very high positions to the first or second positions is a combination of the downward shifts *to* and *from* the third position. This is the most difficult shift of all. It involves two distinct thumb-actions, and has to be practised slowly until it is perfectly smooth.

Let us take as an example the shift from B with the fourth finger

on the E-string in the eighth position to B with the first finger on the A-string in the first position.

In making this shift, the hand and the arm move backwards, until the fourth finger is approximately over F. The thumb then allows the neck to descend to the pad of the second phalange, and at once moves backwards to provide the point of rest for the violin. Meanwhile, the hand and arm continue to move away from the body until the fourth finger reaches B in the first position, when the first finger is pressed down on the A-string and the thumb is brought to a thoroughly comfortable position, as was explained before.

The thumb is of the first importance in shifting. For, unless the violin rests securely on it, and unless hand and arm are free to operate, shifts are difficult and intonation uncertain.

Next in importance is the knuckle. It must be presented unhesitatingly and without strain in the striking-plane. But of course this depends in great part upon the position taken by the thumb.

Much patience is necessary in working out the shifts. The easy—*and useless*—way is to "make a stab at them." But the result of that way is a maximum of uncertainty and a minimum of confidence. Among the best exercises for solid study are those numbered 2y and 2z. And their value lies in the fact that, in performing them, the finger acts as the measuring-agent, not only for their special shifts, but for all the others.

Two words of advice in conclusion.

Do not study shifting by ear.

Do not allow the ear to persuade you that shifting is more difficult than it really is.

From the highest B to the B in the first position on the E-string measures less than 6½ inches, and that is the longest movement that the hand can ever be called on to make. The range *of sound* represented by these 6½ inches is so great that one easily forgets how slight a movement is necessary to cover the distance. Indeed, the practice of shifting loses half its terrors if the eye helps the ear.

CHAPTER VIII

SPICCATO. STACCATO

THE spiccato is usually divided into two sorts, the heavy and the light—a division which is not really accurate; for either sort may be played heavily or lightly.

The heavy spiccato is the musician's spiccato: the light is the virtuoso's.

The former is almost unlimited as to speed, flexibility, and power of tone-gradation. It works instantaneously and kaleidoscopically. The latter demands unvarying pace and a one-level-tone. Its object is merely to glitter and to scintillate.

Of the two sorts, the musician's favours the lower half of the bow: the virtuoso's, the upper half.

After so much comparison, a definition will perhaps be welcome. Let it be said, then, that the spiccato is a series of rapid detached notes, each one of which is played unaccented with a separate bow-stroke. (The fact that it is unaccented differentiates it from the martelé bowing.)

We shall now take the two sorts, the heavy and the light, in that order; and discuss the technique by which they are produced.

In the heavy spiccato, success depends largely upon the perfection of the technique in changing the bow. In fact, the student is advised to practise it first without raising the bow from the strings, as a détaché bowing performed from the wrist alone. This exercise may best be begun in the middle of the bow (see page 44). Indeed, owing to the compensating movements of the wrist necessary to keep the bow in the proper planes, it can never be played with any great speed. However, speed is not the purpose of this exercise. It is intended to familiarize him with the changes of bow welded into one, and performed without any intervening stroke, or any longitudinal movement of the arm.

When this exercise "goes" smoothly, it may be repeated at various parts of the bow. After that, the spiccato is begun; but it must first be made as a succession of down-strokes or of up-strokes.

The down-stroke method is as follows:

Hold the bow poised slightly above the string. Then move it forward in the air, exactly as though you were making a change of bow, stopping at the point at which the return would be begun. Now pass the fingers downwards, as in the preliminary exercise, lowering the bow meanwhile from the wrist, until the hair momentarily brushes the string, when the knuckles are again raised by slightly raising the wrist. Return the bow in the air to the starting point, and repeat until the movement can be made with swift certainty, the bow being raised from the string only so far as is necessary to produce a crisp sound.

Now for the up-bow method.

First pass the bow downwards by straightening the fingers and thumb as far as is convenient. The fingers are now moved upwards, and the bow is lowered from the wrist until the hair brushes the string, when the knuckles are again raised to the position from which the down-strokes were started. The bow is now returned to the starting position in the air, and the movement repeated until its execution is satisfactory.

The student has now practised the spiccato, first as a succession of down-strokes, and next as a succession of up-strokes. He must now try alternating them, as in the finished bowing. But it will be necessary to proceed very slowly at first, and to begin, not with the strokes themselves, but *between them*. In fact, he will have to put himself in the mental attitude of being about to begin a succession of down-strokes; and, after the first stroke, changing his attitude to that of preparing for a succession of up-strokes. In this way he will avoid the tortured movements which often accompany the introduction of a new technical element.

When the student tries the bowing at a higher speed, he will probably suffer many disappointments. And before he can overcome his difficulties, he will have to examine his procedure very closely.

The bowing is directed by the hand, and is ordinarily performed without arm-motion. But, should the arm be held entirely motionless through conscious effort, fatigue (if there is any) may be ascribed to that very fact. For if the hand and fingers are to operate successfully in the constant adjustments which constitute the bowing, the arm must be left free to make those adjustments possible.

Provided this is done, there will be a series of very slight vertical arm-movements. These are caused by the compensating motions of

the wrist while moving the fingers up and down, and by the necessity of keeping the hair at its best height above the string. Thus, during the up-stroke there occurs a tiny movement of the forearm towards the floor. And during the down-stroke there should be a similar, but opposite, movement. These movements are not plotted in the arm. They are the natural outcome of the hand-technique when the arm remains flexibly at its disposition.

Should the tone sound woolly, instead of clear and ringing, it is probable that the hair is being placed too carefully in contact with the string. At the beginning of each stroke, when the hair is descending to the string, the hand must be *swung* from the wrist, with its weight helping to a certain extent. The process may be illustrated by the way in which a pendulum gathers momentum during the downward part of its swing.

When the student has fully mastered the bowing, as described, he should go on to add a certain amount of arm-movement. This lengthens the contact of hair and string, and so greatly augments the tone.

We shall now discuss the technique of producing the light spiccato. It differs from the heavy spiccato in that the hand does not poise the bow above the string between the strokes. The break of contact between hair and string is caused by the elasticity of the bow. And this, again, is brought into play through the action of the hand.

If we turn back to Plates 17 and 18, we can refresh our minds with two important facts. The horizontal axis of the wrist is tilted. And the effect of this is to raise the knuckles; and so, not only to raise the bow, but to pass it to the left of the player, or upwards. (This also holds good in the opposite direction, *mutatis mutandis*.)

This is the technical procedure in making the light spiccato; plus, of course, the bending motions of fingers and thumb necessary to keep the bow moving parallel to the bridge. All compensating movements of the wrist are omitted. For, were they included, the resulting effect would be either a heavy spiccato or a smooth détaché.

After the hair has been placed in contact with the string, and the knuckles smartly lowered, the bow is bounced into the air. (This bouncing is caused precisely by the omission of the compensating movements.) Then, after the bow has bounced into the air, advantage is taken of its subsequent fall. The knuckles are raised to move the bow upwards again, and the motion again causes it to leave the string.

It is important that the arm should be held as free as possible, and that every precaution should be taken against raising the collar-bone even though the bowing-action is solely that of the hand from the wrist.

The best way is to begin the practice of the light spiccato at a rather quick tempo, and afterwards, when confidence has been established, to decrease the speed. We have already pointed out that it is played somewhere between the middle and the point of the bow, but nearer the middle than the point. Experiment will show exactly the best spot for ultimate success. The higher the speed, the less the bow is allowed to leave the string. Conversely, at a low speed the hand permits the bow to leap further into the air.

When it comes to putting the spiccato to practical use, it is often found difficult to co-ordinate the actions of the two hands. It is therefore best to begin the training by playing eight spiccato strokes to each finger of the left-hand; and later to reduce the number, through four and two, to the point of perfect co-ordination between the bow and the fingers of the left-hand.

Crossing the strings is often difficult, particularly when only one or two notes are played on a new string, before returning to the old one. The spiccato movements in the Bach *Solo Sonatas* abound in these difficulties. Their study is most earnestly recommended.

The technique of crossing the strings is similar to that of crossing the strings in the détaché bowing. In other words, to perform it, the hand is lowered or raised from the wrist. Then, when the desired elevation has been reached, the wrist is raised or lowered, until the normal position has been established on the new string.

One last word on the *musical* effect of the spiccato. Alterations of speed and tone-intensity produce surprising musical differences. At a high speed the technique will suggest needle-points. Yet the identically same technique, when performed at a low speed, will suggest weight, dignity, and deliberation of utterance. If the contact between hair and string is intense, we may expect almost any degree of hard brilliance. If the contact is light, the resulting sound will be soft and feathery. In fact, the variety of the spiccato is infinite.

As we have now dealt fully with the two sorts of spiccato, we can turn our attention to an equally important subject—the staccato. Only it must be premised that that word is not used in exactly the same sense on the stringed-instruments as it is on the wind and keyed-instruments. It is not merely the art of playing a great number of

short detached notes very rapidly, but of bracketing them together at the same time *in one bow.*

The usual way of teaching the staccato is not exactly a credit to the musical profession. Yet it is a way that is much in vogue with certain practitioners, to whom reference was made in our first chapter.

It is not a musical method, but rather a conspiracy of two against the Almighty. In its barest outline—for the subject is not edifying—the scheme is worked somewhat as follows.

A pupil is given a certain quantity of very black-looking music, much beslurred and bedotted, and is told to practise it "as a staccato exercise." He practises—and practises—and practises; with the result that it sounds dismally rickety, and quite unlike the teacher's own staccato. A few weeks of this sort of "study" generally reduce the pupil to the point of suicide. And it is then that the teacher lifts up his voice in sad exaltation, telling him that the art of staccato-bowing is "a gift from Heaven." Now, the stern human logic of this statement is that, if some have the gift and others have not, it is useless for the have-nots to waste any more time about it. They need practise it no more, unless they expect to receive a sudden divine illumination one fine morning when they are at their music-desks.

But, strange as it may seem, this sort of human logic does not enter into the professorial scheme at all. In its place, teacher and pupil set their brains to hoodwink the divine intelligence. And the teacher's part of the plot is to prescribe more and more exercises, more studies, more concertos, with new key-signatures and new time-signatures—all as black as Styx and as hopeless as Hades.

The wretched pupil's part is to sit in his back-room and "work hard" at these exercises. This—to give him his credit—he always does, like a Trojan. But the years pass, and the staccato does not appear. He has probably never heard that any mechanical principles or physiological adjustments enter into the matter. And if he has, he cannot go to his teacher in search of light on that subject. For, so long as he is outside the sacred pale of staccatoists, the teacher can always exculpate himself by a solemn reference to the place where he supposes the staccato comes from.

Need it be said that, when such a pupil's student-days are nearing their end, and he is beginning to think seriously of the orchestra as a profession, he too is likely to soothe his wounded vanity by the theory of *The Divine Origin of the Staccato.*

Let us draw a veil over this unedifying picture; and at the same

time withdraw one from our own picture, *The Mundane Origin of the Staccato.*

The staccato, as we have said, is the art of rapidly bracketing together a great number of short detached notes in one bow.

In order to accomplish it, the player must eliminate any motion of the bow that originates in its intrinsic elasticity. Otherwise, this would act as a back-lash, and would either blur the sound or interfere with the orderly progress of the bow. Furthermore, he must not only direct the bow upon the string with such action of his hand as will produce the desired intensity of tone, but must also start and stop the bow with such part of his anatomical mechanism as is best adapted to perform the movement with great speed. And this must be done so as not to interfere with the tone-producing function of the hand.

Now, all this can be accomplished without any special interposition from above. It needs only the three human qualities of intelligence, judgment, and application.

We need not waste words on any of the staccato-methods that are founded on conscious stiffening of the shoulder or arm. Their object is generally to pluck the result from a kind of nervous trembling of the arm. These are not worthy of serious consideration. But we shall examine two of the "methods" which often make up the hoodwinking scheme mentioned above.

In the first, the bow is placed on the string. The hand and forearm are then rotated, so that the first finger is jammed against the stick, which is bent until it very nearly touches the hair. The pressure of the hand and forearm is then relaxed by counter-rotation, which causes the bow to move slightly upon the string. The whole action is centred round the thumb.

In the second, the stick is bent by means of pressure applied by the first finger. A sudden relaxation of this pressure (combined with a turning movement of the hand) then causes the bow to make a slight movement. The whole action is again centred round the thumb.

The effects of these "methods" are deadly. Let us see what they are.

1. The stick, having been first pressed down to the hair and then suddenly released, jumps or shudders between every two strokes. This, in itself, is a great hindrance to speed.

2. The sudden relaxation, which follows the compression of the string by the bow, causes the hair either to leave the string or, at any rate, to shift round on it. This, again, is a great hindrance to speed.

(And we must not forget that our aim is from twelve to sixteen strokes per second.)

3. The obstacles described above are generated between the bow and the string at the point where they are in contact. In neither of the two "methods" could the hand-movements be made at the rate of twelve per second. That is quite certain. On the other hand, it is equally certain that, with those "methods," the hand could and would make its movements faster than the bow would permit. What would be the result? In one word, *blurring*. Two strokes of the hand would be run into one of the bow. And both hand and arm, powerless to overcome the obstacle, yet frantic to do so, would soon "peter out" in a bad attack of cramp.

These evil "methods" and their more evil results are all due to one fundamental misconception: that the notes of a staccato passage have to be *dug out* of the string.

Here a short digression is necessary, as it is desirable to warn the student against building any of those connecting-bridges that are often improvised between *technique* and *sound*.

An experiment will help us.

A violinist is asked to select a passage, and to play it at full speed. He is then requested to play it again; but this time under the magnifying-glass. In other words, he is to play it at about one-fourth the previous tempo, but it is to be the same passage in all its proportions.

What will be the result?

Nine times out of ten it will be as follows: Every detached note, whether staccato or not, will be played just as short as before. Only, the divisions between the notes will be lengthened, so as to fill out the time. Every sustained note, instead of being played four times as slowly with the same amount of bow, will merely be played with about four times as much bow as before.

There will not be the slightest effect of a magnifying-glass. Everything will be out of focus, as in a distorting-mirror.

The deduction is plain. Almost all students, teachers, and players form their conception of technical action solely from the sounds that come to their ears as a result of that technical action. And, conversely, the varying effect produced by the same action, when performed at different speeds, is (if noted at all) ascribed to a difference of technique.

Now, the sound of the staccato-bowing is that of a succession of notes, all short, crisp, firm, and sharply defined. It is therefore argued

that, to produce this crispness and sharpness of definition, the bow must dig the notes out of the string.

In reality, all that is necessary to produce the desired sound-effect in the staccato-bowing is to start and stop the bow in innumerable tiny strokes. It is the speed with which they follow one another that makes all the difference in sound between the staccato and a succession of slow detached notes.

This, then, is the first maxim for success:

The contact between hair and string must remain constant, and all vibration of the stick must be eliminated.

When this is done, the only question left is how to start and stop the bow. Perhaps the appended Figs. 20 and 21 will help the student to understand the difference between digging out the notes and simply passing the bow along with a certain constant degree of contact, varying with the amount of tone desired.

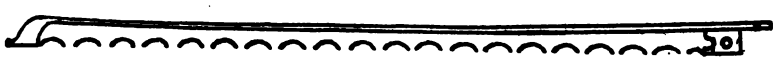


Fig. 20

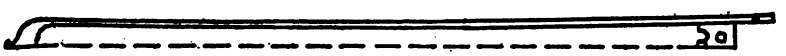


Fig. 21

Of course, the moment this understanding is reached, it becomes apparent that any hand- or finger-action that is employed alternately to depress and release the stick must be discarded as the root of all the evil.

Let the student place the bow in contact with the string, and draw it slowly from end to end. Then let him reflect that this is actually the procedure of the staccato-bowing, minus the action which breaks up the continuous stroke into many short detached parts. In fact, the technique of the staccato combines two entirely distinct functions:

1. Tone-production.
2. The action by which the stroke is broken up into many parts.

The least tendency to confuse or to merge these two functions is bound to result in failure. And the proximate reason why the false system (illustrated by Fig. 20) can lead nowhere is that it asks of the hand an impossibility—the production of the tone for each stroke separately, and with the same mechanism.

Tone-production we are already acquainted with. It consists of downward pressure with the whole hand from the wrist, with the object

of establishing a certain quality of contact between the hair of the bow and the string. (The downward pressure is, of course, merely transmitted through the fingers.)

The action of breaking up the stroke is *not* performed by the fingers, *nor* by the hand, for the reason that either of these methods would interfere with the tone-production. It is simply that of rotating the forearm with a very slight reciprocating motion. The sensation, it may be added, is located at the outer end of the arm next the wrist.

The following exercise will give the student an exact idea of the action, and will train him to perform it.

For the up-bow staccato, the hand and forearm are placed in position as though to play the piano.[1] The fingers are bent and are held above the edge of a table as though very slightly raised from the keys. Meanwhile, the thumb rests lightly on the table. The forearm is then quickly rotated, so that the fourth finger strikes the softest possible blow on the table; while the thumb is momentarily raised, and then returned to its original position.

For the down-bow staccato the exercise is performed with the fourth finger rested on the table and the arm rotated so as to cause the thumb to strike.

The rotation of the forearm must be done with the greatest possible speed and lightness, and a pause must be made before its repetition. The utmost care must be taken *not* to make the movement either with the fingers and thumb or with the hand from the wrist. The hand and fingers must be immovable, and the action must be made by the forearm alone. It is on this point that the student is most likely to go wrong. But the whole success of the bowing depends on the separation of this action from the hand and fingers.

The down-bow staccato is no more difficult than the up-bow, nor are either of them more difficult at the heel than at the point. That popular fallacy is caused by the popular habit of resting the weight of the bow on the string. If the bow is held in proper control by the hand, it can make no difference at what point the staccato is executed. The only small point of exception to this last definite statement is in the degree of contact. And that is concerned only with the increased stiffness of the hair towards the heel of the bow.

If, when the student comes to execute the bowing on the violin, he is not successful; or if some of the notes are clear and others are blurred; or if the progress of the bow seems to be in any way hampered; or,

[1] If desired, the exercise may be done at a piano.

finally, if the arm should become cramped, there is but one explanation. He is not keeping the function of tone-production distinct from the process by which the stroke is divided into its component parts. The fingers have become involved either in the tone-production or in the action of the forearm.

CHAPTER IX

HARMONICS. PIZZICATO. TRILLS

As we are about to undertake the study of the harmonic (or "flageolet") sounds on the violin, it will be as well first to answer the question: What is a harmonic?

A violin-string (when set in vibration) vibrates, not only as a whole, but also in segments (or nodes), such as halves, thirds, quarters, and so on. The points at which it naturally breaks up into these subsidiary vibrations are called "nodal points." And if the string is lightly touched at any one of these nodal points, the action of the finger destroys the vibration of the complete string-length, and compels it to vibrate segmentally.

The sounds, so produced, are called "natural harmonics."

Now, it is quite immaterial whether, in producing these natural harmonics, we measure off our segment-length from the bridge-end or from the nut-end of the violin. The octave-harmonic, of course, lies exactly midway between the two points. But the sixteenth-harmonic, for instance—that is to say, the quarter-length of the string—can be measured from either end. This scientific fact has important musical results. For it enables us to produce on the violin a completely new series of harmonics, all made by stopping the string with the first finger to shorten it (and so raise its pitch), and then lightly touching a nodal point of the shortened string with the third or fourth finger.

The sounds, so produced, are known as "artificial harmonics."

It is to the study of this double series of harmonics—the natural and the artificial—that we must now address ourselves. And we shall divide the study into two parts: first, the technique of producing the harmonics, and next, the technique of moving from one to another.

With regard to the natural harmonics, we need only say here that they exist theoretically on each string as a regularly diminishing set of intervals from the open string upwards—an octave, a perfect fifth, a perfect fourth, a major third, and a minor third.[1]

[1] Full particulars of this series and of the various methods by which the notes are to be obtained on the violin can be found on pages 328–34 of *Orchestration* (Forsyth). Other references, in the same volume, at pages 305, 388–89, 406–9, 423–24, 443–45.

The artificial harmonics, however, demand a good deal more attention. And we shall first describe the three kinds that form the basis of the artificial harmonic technique.

A. The fourth finger lightly touches the nodal point a perfect fourth above the first finger. (Resulting harmonic sound: two octaves above the first finger or new fundamental.)

B. The fourth finger lightly touches the nodal point a perfect fifth above the first finger. (Resulting harmonic sound: a twelfth above the first finger or new fundamental.)

C. The third finger lightly touches the nodal point a major third above the first finger. (Resulting harmonic sound: two octaves and a major third above the first finger or new fundamental.)

When one plays an octave with the first and fourth fingers on two strings, the stretch of the fingers is as far as can be made with entire comfort. When, instead of an octave, a ninth is played, a distinct effort is needed to extend the fourth finger. Now, the harmonic combinations lettered "A" and "B" above involve the placing of the fingers as though for an octave and a ninth, but on one string instead of two. The hand, of course, is inclined diagonally to the neck of the violin. So that the apparent difficulty of the stretch is increased. This difficulty, however, can be overcome to a great extent by proper technique.

It must be clearly recognized that the artificial harmonics are *not* double-stops, for in double-stopping both fingers have similar functions. Here they are entirely dissimilar. And unless this fact is grasped, failure is bound to follow.

In the production of artificial harmonics, the most important finger is the first. The harmonic *may* sound if the fourth finger, in error, touches the string on either side of the nodal point, instead of directly upon it. But no possible manipulation of the fourth finger will produce a clear harmonic if the first finger is functioning improperly. The study of the harmonic technique should therefore begin as follows.

Place the first finger, properly posed, on the string, as though with the sole intention of playing a stopped note, and then sound the result with the bow. But, while so doing, bring the fourth finger slowly down, until it rests as lightly as possible on the string, a perfect fourth above the first finger. Then raise it slowly from the string, judging from the sound of the first finger (now again heard) whether its pose was in any way modified by the action of the fourth finger.

It is best to begin with the perfect fourth ("A" in the above list)

because the hand is then in its most unstrained position. The fourth finger must be brought down from the knuckle. It will lie almost flat upon the string, because it is extended. Our technical aim here is to operate the fourth finger without disturbing the pose of the first finger. Naturally, the bringing of the fourth knuckle near to the neck of the violin would tend to do this. And, as an additional bad result, the muscles and tendons that hold together the finger-shafts in the hand would be tightened. If the fourth finger is operated without force from the knuckle, as far as is necessary to place the flat tip upon the string, the hand will be left free, and the first finger will be undisturbed.

This technique of the fourth finger is peculiar to harmonic-playing. Here its function is, not to stop the string, but to touch the nodal point. The technique should therefore be practised slowly and repeatedly, until the difference is clearly established in the student's mind, and until the two fingers are able to fill their respective roles instantly.

The harmonics played with the first and third fingers ("C" in the above list) may be studied next. Their study involves no new difficulty. In the combination, however, where the fourth finger touches the nodal point a perfect fifth above the first finger ("B" in the above list), there is a new difficulty—that of extending the fourth finger without binding the hand. The first finger must again maintain its pose undisturbed, and the fourth finger must be brought down with the greatest care not to disturb that pose. If the action takes place exclusively from the knuckle—the finger being entirely flattened in order to extend it as far as possible—there is little likelihood of failure. Keep in mind the fact that the pose of the fourth finger is insignificant. The important thing is its operation from the knuckle, so that the first finger may be undisturbed, and yet so that the nodal point may be reached.

The correct production of these harmonics should be practised on all four strings throughout the first four positions, but the first finger pose should always be assumed to begin with. After that, the depressing and raising of the high finger can be attended to.

The technique of moving from one harmonic to another may be divided into two stages. The first involves movement from natural to artificial harmonics: the second, a succession of artificial harmonics played by moving from position to position.

Almost every passage of any length in harmonics makes frequent

use of the natural among the artificial harmonics. And it is here that we have specially to beware of slipshod technique. It is so easy to play the natural harmonic with the one finger necessary, that vigilance over the first finger is often relaxed when the artificial harmonics are resumed.

Let the student therefore practise on the A-string the natural harmonic A (played with the third finger over D in the first position), followed by the artificial harmonic B (played with the first finger on B and the fourth finger over E), alternating between the two and taking the greatest pains to attain technical precision in playing the artificial harmonic.

Another good exercise on the A-string is to sound the natural harmonic E (played with the fourth finger in the first position), following it with the artificial harmonic B (played by stopping the string at B with the first finger, while the fourth finger continues to touch the perfect fourth above). Here his attention will be concentrated on assuming the proper pose of the first finger without actually breaking the contact of the fourth finger.

A succession of artificial harmonics is difficult only when the harmonics are considered as double-stops—that is to say, when the mind concerns itself with the progress of *both* fingers from one position to another. When this occurs, especially in rapid passages, a sort of mental muddle sets in. The intention is confused as between the two fingers. The first finger loses its pose. It begins to stop the string less firmly. Then the fourth finger comes to its rescue by pressing upon the nodal point. The whole position becomes insecure, and pressure is likely to be applied from the thumb. And the general result is that freedom and speed go by the board.

The remedy is obvious. The mind must bend itself first and foremost upon the progression of the first finger. Only then must it take cognizance of what the fourth finger is doing. The latter should be held in position as the unconscious medium, and attention should be centred on shifting the first finger from note to note.

The best method of practising a succession of artificial harmonics is to play it first without the fourth finger, simply as a succession of notes stopped with the first finger—preferably within one bow. When this can be done rapidly and with ease, the fourth finger should be added, but only as an unconscious agent.

It is true that, as the first finger mounts higher and the notes lie closer together, the fourth finger must be brought a little nearer to

the first; but the movement is very slight, and readily dictated by the ear.

The technique of double harmonics does not differ from that of single harmonics. The former have acquired for themselves an undeserved reputation for colossal difficulty. But they are not nearly as formidable as they look on paper. There must be no clutching of the low fingers. If there is, the hand will tighten, and so prevent the proper placing of the upper fingers. That is the only shield of precaution with which to attack the new citadel.

Before closing this short account of the harmonic-technique, a word of caution must be uttered with regard to the use of the bow.

It is obvious that if, instead of a harmonic, a stopped note *of the same pitch* were played on the same string, the contact of the hair with the string would be much more delicate. The two notes are, say, a couple of octaves apart. And with the stopped note, the fingers would be very near the bridge, and consequently the string would be much stiffer.

The effect of this on the player is curious. Unless the greatest care is taken to avoid it, the association of a high sound with delicacy of bowing-contact is sure to cause a miscalculation in the bowing of harmonics. The pitch is no guide at all. And as the left-hand production is nearer the nut than the bridge, the bowing should preserve exactly the same quality of contact as though the first finger were operating alone.

This point may be studied and tested in the exercise given on page 81. When the (lightly stopping) fourth finger is lifted, the tone of the first finger note should sing out clearly, without any re-arrangement of the bow-contact.

We cannot begin our study of the pizzicato better than by quoting the late Dr. Richter's classic admonition to his London orchestra: "You shall blay mehr mit ze meat, and not zo mosh mit die horns."

This advice, though given many years ago on one of his first visits to England, deserves to be held in permanent remembrance in all concert-halls. For the pizzicato-playing of some of the best orchestras and chamber-music societies is still painfully *horny*. At times almost no musical sound proceeds, at any rate from the upper stringed-instruments. The players' nails go *plick-plock, plickety-plock* with an explosive violence that is genuinely alarming to the musical sense.

All this is bad enough in the orchestra. But it is infinitely worse in chamber-music, where the pizzicato-passage may have the charac-

teristics of a solo, with all that is implied thereby in the matter of expression and tone-shading. The *Harp-Quartet* of Beethoven may be cited as an example.

The truth is that most string players class the pizzicato with the banjo. Both are unmusical, and so elemental as to be scarcely worth practice. Yet it must be allowed that there is a great deal of pizzicato-playing in orchestral music. And as composers seem to use it with a serious intention, its proper execution should be made the subject of an equally serious study.

Fingers are of all kinds: thin, thick, short, and long. And any one of these may be finished off with half-a-dozen sorts of finger-nail. Then there is the nature of the finger-tip itself. It is easy to produce a fine pizzicato-tone without any practice at all if the finger-tips happen to be large, soft, and well-padded. Short, shallow nails, too, count for much with the born pizzicatoist.

Unfortunately very few violinists' fingers combine these advantages. The most usual type of finger is thin at the extremity, rather than padded, with the nail growing to the end of the finger. A finger of this sort needs training. If it is untrained, the thin finger-tip is compressed to hardness between the string and the nail. And even though the nail may not actually come into contact with the string, a dry audible *click* accompanies its release.

Our first object, in studying the pizzicato, will be to eliminate this *click*. Our second, to acquire the faculty of rapid execution without exhausting the right-hand. Our third, to face and conquer the left-hand pizzicato.

The right-hand pizzicato is executed primarily with the fore-finger. The tip of the thumb is placed against the corner of the finger-board to steady the hand and to obtain purchase. This applies *generally* to the single-note pizzicato. In playing chords, the finger is swept across the strings. It functions as part of the hand, and is not operated from the knuckle.

The *click*, which is often heard when the string is released, is caused by the fault of turning the hand towards the scroll of the violin. If, instead, the hand is turned towards the body, the string lies diagonally, and not directly, across the finger. The release then takes effect towards the side of the finger, which is always padded, and never covered in its entire width by the nail. Consequently the *click* vanishes.

Players turn their hand towards the scroll fearing that otherwise

the bow will come into contact with the head or face. But this depends upon the way in which the bow is held in the hand while executing the pizzicato. The pizzicato should first be practised without the bow until the correct finger-position has become easy to assume. And only then should the bow be held in the hand.

The three Plates 33, 34, and 35 explain themselves. Plate 33 shows the right method of holding the bow in the hand. Plate 34 shows the finger properly presented to the string, while the hand holds the bow so as to clear all obstructions. Plate 35 shows the wrong way of doing all this.

So much for the *click*.

The second subject for study is the execution of long rapid passages without fatigue. Such passages are usually played with a single finger. And at the end of the journey, the hand is always in a state of complete exhaustion, while the number of notes dropped *en route* is an open secret to all who have ears to hear.

The remedy is very simple. Let the player use his first and second fingers alternately during a passage of any length and complexity. A little practice on one note to begin with will enable him to develope a high-speed pizzicato without the least fatigue.

In the left-hand pizzicato, the first and highest note on any string is played by striking the string with the bow near the point, and thereafter the finger stopping the note that has just been sounded serves as the plectrum to sound the next in order.

It is undoubtedly difficult to hold the stopping-finger firmly down, while operating the plucking-finger. Rapid passages often sound woolly. Many notes even refuse to sound at all. The plucking-finger is so close to the stopping-finger that it cannot get hold of the string—so close is it to the finger-board. For this reason the type of left-hand pizzicato that occurs in Sarasate's *Zapateado* is seldom heard clearly. And should the other type, found in Paganini's *24th Caprice*, be heard without a note omitted, a chorus of admiration shakes the concert-hall.

The compositions of the late Señor Sarasate contain a bewildering variety of pizzicato passages, all of which he played with astounding ease. Though his delivery of these passages was clear, rapid, and ringing, he was always able to "throw them off" with a certainty that seemed to be almost nonchalant.

An adoring public, lay and professional, acclaimed his power as a sort of miraculous gift. But though Sarasate himself had all the

Plate 33

brilliant side of the artist's nature developed to perfection, he had one still more precious gift, the gift of understanding. And as his art was free from any element of chance or trick-work, so he had a strong apprehension of the exact technical execution of the pizzicato, imposed by the structure of the hand and the disposition of the strings to the finger-board.

It may be as well, then, to state precisely what his technical method was. And it is only necessary to add that this information, as set down here, came direct from the distinguished artist's own lips.

On every string but the first, the fourth finger (after having had its note sounded by the bow) operates to sound the next lowest finger by plucking. This plucking, however, is *not* done with an upward lift, but across the finger-board. The fourth finger comes to a rest upon the string above the one plucked. The remaining fingers are then able to operate with ease and clearness, by reason of the support given to the outer side of the hand.

If the third finger is the highest to be sounded, the fourth finger is simultaneously placed on the string above.

If the second finger is the highest to be sounded, the third finger is simultaneously placed on the string above.

The student should experiment to convince himself of the technical soundness of this action, and should then practise it systematically along its two indicated paths. The first of these is to pluck with the fourth finger, halting it on the string above. And the second is to lower either the third (plus the fourth), the second (plus the third), or the first (plus the second) to the string, and then immediately to exercise it in the pizzicato.

It is obviously impossible to adapt this action to the E-string. But it is also unnecessary. For on that string, the fingers are able to pull slightly downwards, and have no special difficulty to contend with.

We now come to the subject of trills. A beautiful trill—which is not necessarily an extremely speedy trill—is an embellishment of high æsthetic value. Yet it is an embellishment that is seldom well done.

The ideal trill consists of two clearly-heard notes in rapid alternation. In contradistinction to any form of vibrato it is entirely unaccented. Thus it acts as a beautifying ornament. It releases the ear from any impression of basic-tone, and as one may learn from any song-bird, it provides an enchanting puzzle in the dazzling proximities of its two distinct notes.

This is the ideal trill. And on most instruments, from force of circumstance, it remains this and nothing more. But the violin offers its devotees so many opportunities of what may be called "experimental misbehaviour," that at least two sorts of spurious trill are to be heard quite frequently in our concert-rooms.

The first sort is the whirring *dragonfly* trill, a kind of trembling flutter of sound, that is often indistinguishable from a violent vibrato of the incorrect type. It is performed by holding the rigid trill-finger as near the string as possible, and then (by a kind of nervous impulse) causing it to vibrate and touch the string lightly at each downward flicker.

The second sort is rather worse. In executing this trill, the player holds the knuckle of the trill-finger three-quarters rigid. Thus, every attempt on his part to bring the finger-tip down on the string draws the stationary finger forward with a rolling movement onto its tip. The painful oscillations of the lower tone that result produce the kind of sound that one associates with a *nanny-goat* in distress.

Besides these two zoological indiscretions, there is a third sort of degraded trill that may just be mentioned—the trill over a minor third. This perversity, though dreadful enough to listen to, is less frequently heard, and is by no means employed only by violinists.

A great deal might be written on the subject of these disfigurements. But one need only say that they are not really trills at all, but cramping and blemishing affectations, that harm both the ear and the musical sense.

As an antidote to them, let it be added that, with a correct trilling-technique, there will be neither cramp, nor movement of the low finger. The trill-finger will operate so easily and will stop the string so definitely that clearly-alternating notes will be the sole audible result. In fact, we shall have attained our ideal of all that is beautiful and effective in a trill.

A beginner, as a rule, has certain misconceptions with regard to the trill. He is frightened by the sound of the rapid alternation of notes. He is also inclined to overestimate its speed woefully. He thinks of it as a low tone surmounted by a flutter. (This is, perhaps, his subconscious reduplication of the wavy printed trill-sign.) Hence, he falls into the error of considering its practical execution to be conducted solely by the trill-finger. He almost ignores the low finger.

Now, while it is quite true that the effect of the trill is that of two distinct alternating notes, the main prop of the trill is the stationary

Plate 34

finger, alternately permitted to speak and cut-off from speaking by the active finger. This stationary finger, though necessarily inactive, is equally effective with the active upper finger. In fact, the activity of the upper finger bears a proportion to the audible result of exactly one-half.

Perhaps the best way of bringing this home to the student's mind is to ask him to perform a moderately rapid piano-trill (or two-finger trill) with his right-hand on a table, and simultaneously to perform a violin-trill (or one-finger trill) with his left-hand. Of course, two blows from the right-hand will be heard for one from the left.

Let there be no mental confusion caused by the actual sound. The left-hand active finger has precisely the same speed and frequency as either finger of the right. And unless he understands this fact fully, the violinist (finding one finger inactive) will whip up his trill-finger into a frenzy, so as to make it do double duty. On the other hand, when once the fact has been thoroughly grasped, it becomes evident that the blows of the active finger recur at intervals so far apart, that they can be easily struck, even in a high-speed trill.

The important elements in the trilling-technique, then, are: (1) Immobility of the low finger, (2) Complete freedom in the operation of the active finger.

Here two questions arise.

1. Two fingers are employed upon the same string in trilling. Either the knuckle of the stationary finger or that of the active finger may be held in the striking-plane. Which is it to be?

2. The trill-action is a succession of light blows with the active finger. The knuckle will therefore tend to rise (see pages 14–17). How is this to be prevented?

In answering these questions we have to recognize that nothing must be allowed to hamper the freedom or action of the trill-finger. We may therefore say, in answer to our first question, that the knuckle of the active finger is the one that must be held in the striking-plane; and in answer to our second, that the tendency of the active knuckle to rise must be counteracted, in some way, from the stationary finger.

It follows therefore that the knuckle of the stationary finger will *not* be held in the striking-plane, but a trifle below or above. But, it will be asked immediately, is not this an evasion of our fundamental principles?

The answer seems plain. It is not. During a trill, there can be no question of using the vibrato, and therefore no thought of treating

the stationary finger otherwise than as immobile. It is clear too that certain fine artists of the present day recognize these facts. For they begin every trill with its upper note—an obvious precaution to ensure the proper placing of the active knuckle. However, the latter practice is to be condemned from a musical point of view. Indeed, it is unnecessary, for the correct pose may be assumed through the agency of the lower finger.

We have therefore four things to attend to in trilling:

1. The pose of the stationary finger.
2. The pose of the active knuckle.
3. The immobility of the stationary knuckle.
4. The freedom of the whole outer side of the hand.

If the outer side of the hand is stiffened, it is impossible to move the trill-finger freely. The hand must therefore be held so much relaxed that, when the second is the striking-finger, the third and fourth will limply imitate its action.

We have already explained in Chapter II. that, unless the knuckle of the striking-finger is held in the striking-plane, the tip will meet the string either sooner or later than it expects. If sooner, there will be a delay; for the motor-centre of the brain will be unprepared to direct the raising of the finger. If later, the impulse to raise it at the expected moment is in conflict with the unachieved desire to establish contact with the string. Again there is a gap in the action; which again ends in confused intentions and cramped muscles.

Our first act therefore will be to pose the stationary finger so as to bring the active knuckle into the striking-plane. Our next, to maintain the pose of the stationary finger, upon whose immobility the active finger depends. And we do this simply by setting the wrist after the stationary finger has been posed. It will then be impossible for the knuckle to rise.

It is a mistaken idea that great strength is needed in trilling. Nor is it true that muscular power has to be developed by constant practice. Any normally developed hand has sufficient strength to execute trills.

The cramp that is usually blamed on "lack of strength" is always due to improper technique. And the explanation is pretty sure to fall under one of the three following heads:

1. The pose of the stationary finger maintained by the wrist is affecting the freedom of the hand.
2. The side of the hand is not free.
3. The knuckle of the striking-finger is out of position.

Plate 35

The best method of practising the trill is to assume the proper pose with the low finger, and then—with the rest of the hand relaxed—to strike a single blow with the trill-finger, pausing thereafter to make sure that neither its descent nor its ascent has in any way affected the immobile pose of the low finger, and also that the action of raising the trill-finger has not affected the relaxation of the outer fingers.

Next, two or more blows with the trill-finger may be struck in rapid succession. Then a second pause should be made for an examination of the low finger and the outer side of the hand.

When once confidence has been established, very little practice is needed to keep the trill in fine condition. But that practice must be slow. And its object must be the correct application of fundamental principles.

CHAPTER X

DOUBLE-STOPS. CHORDS. IMPROVISATION

THE technique of playing double-stops does not differ in any way from the simple left-hand technique expounded in Chapter II. It is more complex in practice because two fingers operate at a time, whereas before there was only one. Nevertheless, double-stops sometimes appear to present added difficulties out of all proportion to the fair ratio of two-to-one. Failures occur. And, among the most probable causes of failure, the following may be suggested to the young double-stopper:

1. He is "plunging in the dark" with both fingers, instead of determining his whereabouts with one finger, while gauging the intonation of the double-stop with the other.
2. In placing his fingers, he ignores the relative longitudinal positions of the notes across the strings.
3. He takes needless alarm and clutches the neck of the violin, thereby rendering the vibrato impossible and stiffening the whole hand, so that the two fingers next in order are placed only by dint of exertion.
4. He does not hold the playing knuckles in the striking-planes.
5. He does not hold the free fingers relaxed.
6. He does not rest the neck of the violin on the thumb.

These matters have all been discussed several times in previous chapters. Still, it may be as well here to point their moral in relation to the specific technique of double-stop playing.

Let us suppose the third and first fingers to be placed on G and B on the third and second strings in the first position. The position is settled primarily by the first finger on B, from which the interval of a minor third is estimated, and the third finger placed accordingly.

If the fingers are now reversed so that the first is on E on the D-string and the third is on D on the A-string, the intonation must be settled (before the final decision of the ear can be made) by again placing the third finger a minor third from the first, even though they are upon different strings.

The neck of the violin must, as always, rest upon the thumb, and the knuckles of the two fingers must be placed in the respective striking-planes of the two strings. When this is done, a feeling of security results, with no temptation to hold the second and fourth fingers rigid. The vibrato is brought into play as easily and effectively as though only one finger were operating.

Let us now suppose that the player wishes to proceed to the double-stop A and C-sharp on the third and second strings in the first position. Before everything else he must follow the universal rule, first to select the note which shall be his guide to general intonation (or pitch) as distinguished from the intonation of the double-stop.

It is obviously easier, both aurally and technically, to keep the pitch true by gauging the half-tone D to C-sharp than the perfect fourth E to A.

Therefore, despite the fact that both fingers must operate at precisely the same moment, the player concentrates upon placing the second finger a half-tone behind the third finger, and estimates the location of the fourth finger as a minor third above the second finger.

Here we have one of the most important subjects for thought in double-stop playing. The ear criticises the intonation of the new interval as a major third, but the mind directs the placing of the fingers as for a minor third. If this is not done—that is to say, if entire reliance is placed on the ear—the intonation in rapid passages will always be slightly untrue.

Now let us return to our first example, and suppose that the third and first fingers stop G and B. If the player wishes to proceed upwards to A and C, he will settle the question of pitch by means of the second finger on C, gauging the distance thence to A as a major third—whereas musically the interval is a minor third.

If, instead, he desires to proceed to A and C-sharp, he selects either finger to settle the matter of pitch, gauging the relative position of the other as a minor third, despite the fact that, to the ear, it is an interval of a major third.

At the moment that the new fingers (fourth and second) are placed on the strings, the old ones (third and first) must be raised, so that the newly-operating fingers may assume their most comfortable curves with their knuckles in the striking-planes. In this way a feeling of security will be induced, and the old fingers (third and first) will be able to relax.

When passages in double-stops are played, it may be necessary to carry the hand through several positions. The possible shifts are:

1. Shifts made with the same two fingers (WX-WX).
2. Shifts made with one finger changed (WX-WY, or WX-YX).
3. Shifts made with two new fingers (WX-YZ).

It cannot be too often repeated that the mind is to be concentrated only upon one of the fingers in actually making the shift, and that the intonation of the double-stop is a matter of adjustment between the two fingers.

Thus, in the shift WX-WX, although both fingers are kept upon the string, that finger is selected to perform the shift which moves over an interval that is easiest and surest for the hand to execute and for the ear to judge. The intonation of the other finger is assured by a technical and aural estimate of its distance from the shifting-finger, precisely as was explained above.

In the shift WX-WY (or WX-YX), there is a change of one of the two fingers. The unchanged finger is therefore the one that directs the shift. The new finger comes into play at the moment when the new true-pitch of the shifting-finger has been reached.

Thus, in a shift from E and C-sharp in the first position (first and second fingers on the D- and A-strings) to C-sharp and E in the third position (fourth and second fingers on the D- and A-strings), the second finger on C-sharp directs the shift. It is moved along the string until E is reached. The fourth finger is then placed on the D-string at an interval of a major third from the second finger, and the first finger is raised.

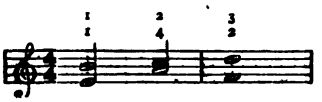
In the shift WX-YZ, one of the two old fingers has, of course, to be selected to direct the shift. The choice falls by preference on the finger nearest to which one of the new fingers will ultimately rest.

Thus, in shifting from A and C-sharp in the first position (fourth and second fingers on the D- and A-strings) to B and D in the third position (third and first fingers on the D- and A-strings) the second finger directs the shift. The first is placed close behind it, and is operated as is usual in a shift of that kind. Ultimately the third finger is placed on B, not with reference to the fourth finger, but with reference to the first finger as it arrives at D.

In playing double-stops, the contact of the bow must be equally sensitive on both strings. It is true that there has to be a certain

compromise in this matter. The intimacy between hair and string is *perfect* for neither string. But it does not fall far short of perfection. The normal stretch between the first and fourth fingers is only an octave. So that, as a rule, the differences due to the momentary employment of strings of greatly unequal length are small.[1]

The vital point, however, is that these differences must be sensed. And to do that, the player must always be completely conscious of the double contact. He must not centre his mind on one string and allow the other to be dragged along in its train. The contact varies with each double-stop, and it may vary with each note of each double-stop. Consider for a moment the exquisite differences of contact that are implied in these three simple chords, even when we leave out of account the primary differences between the two strings in the matter of thickness and tension.



In the first chord, the two strings slope down from the bridge and meet the finger-board at exactly the same angle. In the second, the lower (D-string) note is nearer the bridge than the upper (A-string) note. The angle of incidence of the two strings is therefore different, and the contact is subtly altered. In the third chord, the position is reversed. The upper (A-string) note is now nearer the bridge than the lower (D-string) note. And again there is a small, but quite appreciable, change in the contact.

The main lesson, therefore, that has to be learned is that there is always a double contact. And perhaps the easiest way to acquire the sense of this double contact is to practise delicately and sensitively on the three pairs of open strings. The mind will soon acquire the sense through the hand. And, once acquired, it must never be lost.

The finger-technique of three-part and four-part chords is similar to that of ordinary double-stopping in so far as one finger is selected to establish the pitch, and then the intonation of the others is arranged from that finger. These chords, however, are all played with the down-bow. There is, therefore, a slight break between each pair, due to the return of the bow to the heel. So that it is no longer essential to keep all the fingers on the string while passing to a new position.

[1] Passages in which a lower string is used as a pedal to a subject on the next-higher string are so rare nowadays as to be hardly worth considering.

One finger is selected to make the shift to the new position. This finger establishes the pitch, and the other fingers are arranged in relation to it. As usual, great care must be taken not to grip the neck of the violin, but to allow it to rest on the thumb.

The bow should be in motion at the moment when contact with the string is established. (See what was said in Chapter V on the subject of "attack.") Pressure on the strings is to be carefully avoided.

Tone, in chord-playing, depends on the degree of intensity of the contact between hair and string, and on the speed with which the bow is drawn. The degree of contact and the speed are, of course, matters of choice. But when once they have been chosen, they should not be varied. Only in this way will a round satisfying tone be obtained.

Chords on three strings are played by bowing, first on the lower pair of strings, and then (after pivoting on the middle-string) on the upper pair.

Chords on four strings are played by bowing first on the lower pair, and then on the upper pair. But the player must strive, after establishing the rule by practice, to weld the two divisions of the stroke together, so as to avoid the weak effect of a sprinkled chord.

The functions of the two hands must be entirely separated in the mind of the player. First the left-hand must be adjusted, and then entire attention must be centred on the right-hand. The latter must not operate until the arrangement of the former is completed. Furthermore, the left-hand must not strain sympathetically with the sweep of the right-hand.

After the chord has been sounded, the right-hand is returned as quickly and lightly as possible. The bow is in the air just above the string, and the player is ready for the next stroke.

The study of improvisation has already been heartily commended in these pages. Its value is twofold. In the first place, it opens out for the student untrodden paths of musical interest, or, at any rate, paths that have not been trodden by his own feet. Then, again, it acts as a sort of artistic thermometer by means of which he can truthfully read his own temperature.

The first point that will be forced on his attention, when he starts out to make himself a troubadour, or *finder* of things, is that things are very difficult to find, but remarkably easy to remember.

Incidentally, this will teach him a lesson in humility. Now humility is, both etymologically and actually, only the knowledge of

the fact that one is crawling on the ground when, perhaps, one would prefer to be flying in the air. It is the teacher's business, therefore, kindly and unmaliciously, to tell his pupil that he is still creeping along the surface of the earth; but, at the same time, to do his best to help him to a pair of wings.

At first, as we have hinted, the pupil will only be able to improvise a pair by cutting up the cloth of memory. His improvisation will be nothing but an odd scrap or two of passage-work, picked up here and there while studying his technique. These scraps will all re-appear unchanged, just as he first learned them. Even the keys will remain unaltered. And his phrases will have no more logical connection with each other than the chips on a carpenter's floor.

Out of this stage he must be encouraged by the sympathy of his master. He must be taught that his systematic practice needs to be vitalised by systematic thought; that it is not enough to learn a few passages solemnly by rote, and then to rely on the printed page for more material; that he should be able to play his scales, arpeggios, broken chords, and so on, at every height on his instrument and with many different fingerings; that chords may be inverted and re-arranged in position; and finally that, if he is to prove his earnestness, he must undertake the persistent study of modulation.

The last point is of great importance, because it is the hook-and-line by means of which the pupil's musical interest can best be caught. As soon as he discovers that there *is* such a thing as a maze of relative keys, and that it is a pleasant adventure to stray down one of its inviting paths, he will take a healthy delight in doing so and in spinning the thread that is to lead him home again.

All this means technical progress. For when once you start a man's musical mind working, he begins to feel his technical deficiencies acutely. He will demand variety *of himself*—not only variety of thought, but variety of sound. And these two things involve much meditation and experiment. He will therefore try to beautify his phrases, and to make them "go somewhere." He will be less likely to consider that first thoughts are always best thoughts, and that the chance inclination of a muscle is a matter of doomsday. From this will come all sorts of curious searchings and testings of the things which he "finds." And although he will early discover the limitations of the violin, he will also learn that, in the instrumental realms of beauty and variety, it is king, prince, and chorus of grand-dukes, past all challenge.

So much for the purely musical side of improvisation. We mentioned another side, by comparing its value to that of an artistic thermometer. This is less a matter of music and more a matter of the thing that music pre-supposes—life.

In the first chapter of this book we said something about the bitterness and impatience that too often cloud the student's mind in his early years. This disease, though it has never received a Latin name, is well-known and much-dreaded in all musical academies and colleges. It begins with what Shakespeare calls a "tingling of the blood." And the tingling is generally caused by the fact that the student's emotional arteries, so to speak, are over-distended.

The teacher knows this. He knows too that this state of simmer-and-bubble comes only from *youth*, and does not necessarily boil over into *art*. He distrusts it because it is temporary. He dislikes it because it is violent. To him art at its best is only an awkward human means of escaping from humanity.

What, then, is his duty to his pupil? What is the duty of the man who knows to the man who feels but does not know?

Superficially, one might say that, unless he is a man of infinite tact, he will have to spend a large part of his time in preventing his pupil knowing that he *does* know. But that attitude, except for some momentary purpose, is one of the worst possible. It may not be as bad as the brutality of some masters, whose pupils always "come out raw" after their hour's conflict with him. But it is not, at bottom, honest or helpful.

The only honest and helpful way—and it is by no means certain of success—is for the teacher to descend from his own branch to the ground-level where his pupil is. This, it is true, he can do only intermittently and, as it were, fugitively. He must then first secure the sympathy of his pupil as a friend. And that sympathy, once secured, must never be violated by any seeming doubt on his part as to the reality, or even the poignancy, of the student's emotions.

But he must try—and try his very best—to bring them into better focus with their means of expression. He must show his pupil, patiently and as opportunity occurs, how the blind forces that rack him, though perhaps unintelligible and therefore valueless to the world at present, may be made valuable, nay priceless beyond words, if only their expression is perfected. But, let it be repeated, he must never question the emotion itself. For that is the pre-supposition of the art. And, after all, the student is happy as well as unhappy in having it.

It is just here that the healing study of improvisation should be recommended by the teacher. For if he can induce the pupil to take it up seriously, he is at once putting into his hands an artistic thermometer by which he can measure his own temperature. And it is far better that these measurements and comparisons and reconcilements should be made by the pupil himself than by anyone else. Many natures become callous and almost dead to constant technical criticism. But they are at once marvellously quickened if they are encouraged to step into a more ample space, and there to judge their own attainments on purely musical grounds. Such people never slacken their technical efforts. The pressure is far too persistent for that to happen. But their natures grow. And they are then the more ready to climb the technical hill, because they know that the view from its summit is enclosed by a musical horizon that is ever widening.

There is an old Hindoo fancy that emotion is the centre of the universe. But it is an emotion that does nothing. It neither aspires nor struggles. It exists only. And all life (in this fancy) becomes less divine as its emotion becomes more active. This is far away from all western philosophies: far away also from our own art. But in its very loftiness, it may serve to light the paths of our wandering souls; and, like a cold distant star, to show us our goal—beauty.

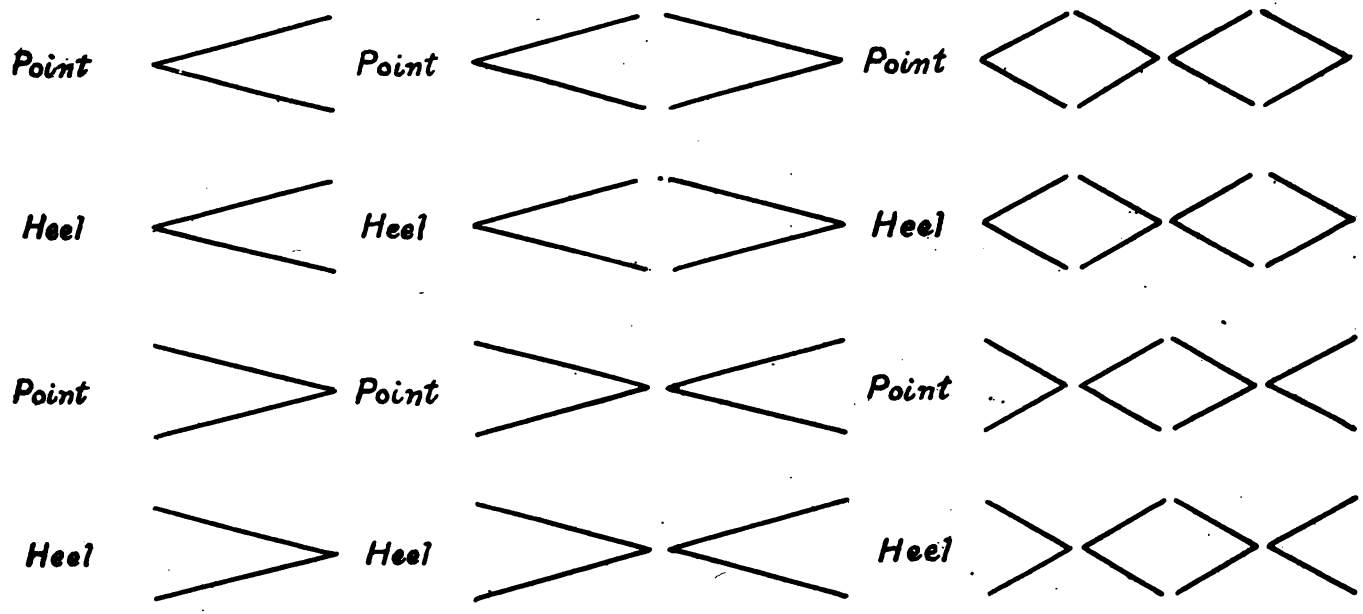

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Fig. 19